

Quadruple and Quintuple Helix Innovation: A Multi-Actor Approach in Reducing the Prevalence of Stunting at Jeneponto Regency, Indonesia

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KEYWORDS

Collaboration, Quadruple Helix, Quintuple Helix Innovation, Stunting, Multi-Actor.

This study aims to determine collaboration between government actors, industry, universities, non-governmental organizations and the media in reducing the prevalence of stunting at Jeneponto Regency. Qualitative methods used by collecting data through interviews, documentation and observation. The results of the data obtained then transcribed into an accurate tool called Nvivo 12 plus. The analysis units used main map and work frequency. This study found that collaboration between government, private, university, non-governmental organizations and media actors had a significant influence in reducing the prevalence of stunting at Jeneponto Regency. To overcome the high stunting rate in Jeneponto Regency, collaboration between actors was needed, including government actors, industry, educational institutions, non-governmental organizations and media. All these actors must work well together. Apart from that, it was also important to know the causes of stunting rate to remain high in Jeneponto Regency. The cause of stunting was the environment, including sanitation and access to clean water, which was very important to prevent stunting.

1. INRODUCTION

Global attention to malnutrition is very large today. It is to improve the well-being of billions of people, with positive consequences for their health, development, schooling and income (1). There are approximately 160 million children under the age of 5 living in developing countries who are severely malnourished (2). Chronic malnutrition in early life will have detrimental consequences later in life, including less education, poorer cognitive skills, lower income and a higher likelihood of living in poverty (3),(4). The long-term consequences of stunted children include increased morbidity and mortality, poor child development (5),(6). The high prevalence of stunting shows that there are still big challenges in ensuring optimal welfare and development for children (4),(7).

Global Nutrition Report 2016 noted that the prevalence of stunting in Indonesia was ranked 108th out of 132 countries. In the Southeast Asia region, the prevalence of stunting in Indonesia is the second highest, after Cambodia (8), so the Government has designated Stunting as a national priority program. This commitment is realized by including Stunting in the 2020-2024 National Medium Term Development Plan (*RPJMN*) with a significant reduction target of 14% (9),(10). The prevalence of stunting in Indonesia is still quite high, especially in areas with high levels of poverty (11). Jeneponto Regency is one of the areas in South Sulawesi that shows the highest prevalence of stunting (12).

In 2019, the stunting rate reached its peak at 18.61%, showing the big challenges faced by Jeneponto Regency in overcoming chronic nutritional problems in children. In 2020, the stunting rate dropped significantly to 15.09%, reflecting the efforts of the government and various parties to improve nutritional interventions and health programs. This downward trend continued in 2021, where the stunting rate reached 12.58%, even though the COVID-19 pandemic was still ongoing. However, in 2022, there will be a slight increase in the stunting rate to 13.97%, which could be caused by the prolonged impact of the pandemic on access and quality of health services and the community's economy. In 2023, the stunting rate will again increase significantly to 17.43% (13),(14). This shows that there are gaps in

government actors. The Regional Government has made various efforts to accelerate stunting reduction as stated in Regent Regulation no. 42 of 2021(14).

In addition, stunting prevention campaigns are carried out, education for mothers of toddlers, monitoring children's growth and providing social assistance including BPJS to at-risk families (15). Various strategies and efforts have been made to reduce stunting rates, but these strategies have not been optimal. The stunting rate in 2023 will increase again to 17.43% (14). This happens because these efforts are not carried out holistically and integrated in all sectors, even though the problem of stunting is a common problem that must also be solved together (15).

Lots studies have examined the issue of stunting nationally, but there are still few study results that specifically examine the issue of stunting at the local level, especially in Jeneponto Regency. Besides that, the innovative approaches used previously did not consider concepts such as Quadruple Helix and Quintuple Helix. One innovative and integrated approach to overcoming stunting problems is multi-sector collaboration. Quadruple Helix and Quintuple Helix Innovation collaboration involving multi-actors synergize with each other in programs and policies. Policies based on multiple partners, the government is no longer alone in making policies, the government is also enabled to collaborate with other sectors such as the private sector, academics and the media which are interconnected based on trust in achieving goals (16).

The aim of the research is to fill the gap in previous research that does not yet have a Quadruple Helix and Quintuple Helix innovation collaboration approach as an approach to reducing the prevalence of stunting, especially in Jeneponto Regency. The formulation of the problem is what the level of stunting prevalence is in Jeneponto Regency, what is the role of the actors involved in preventing stunting in Jeneponto Regency, and the causes of stunting as well as the recommendations needed to strengthen the collaboration to reduce the stunting prevalence rate in Jeneponto. The implication of this study is the need to strengthen cross-sector collaboration and implement more integrated, innovative approaches to achieve more effective results in overcoming chronic nutrition problems.

2. METHOD

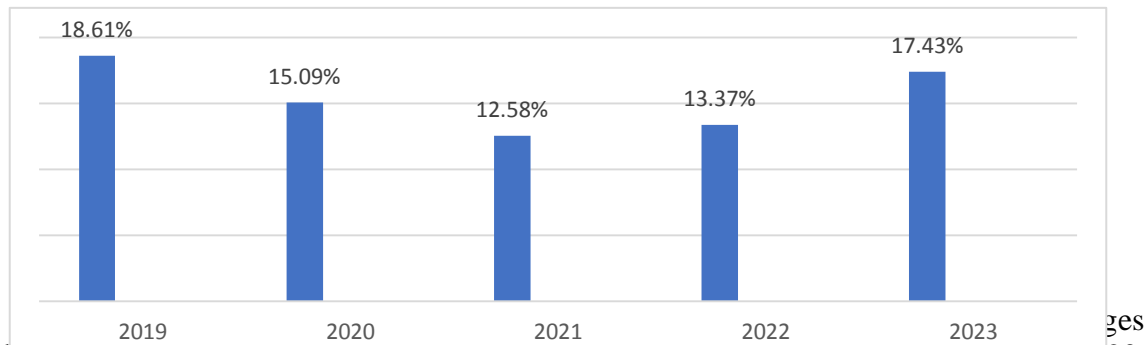
This study used qualitative methods by collecting data through interviews, documentation and observation. Researchers used qualitative methods by collecting data through interviews, documentation and observation offering various important advantages in study. The combination of these three methods helps researchers understand how contextual factors influence attitudes and behavior, as well as hearing actors' perspectives directly. By triangulating data, or using more than one data collection method, researchers can confirm results and strengthen the reliability of findings, producing more comprehensive and accurate data. Then the results of the data obtained are then transcribed into an accurate tool called Nvivo 12 plus, where Nvivo 12 plus is software that helps researchers examine and understand qualitative data better so they can obtain insights and evidence-based decisions. The analysis units used were main map and work frequency.

3. RESULTS AND DISCUSSION

At this stage, the level of stunting prevalence in Jeneponto is discussed, the role of the actors involved, and recommendations needed to handle stunting in Jeneponto.

3.1 Prevalence Level of Stunting in Jeneponto

Jeneponto Regency is one of the areas in South Sulawesi that shows the highest prevalence of stunting, this is observed in Figure 1.



20, the stunting rate dropped significantly to 15.09%, reflecting the efforts of the government and various parties to improve nutritional interventions and health programs. This downward trend continued in 2021, where the stunting rate reached 12.58%, even though the COVID-19 pandemic was still ongoing. However, in 2022, there will be a slight increase in the stunting rate to 13.97%, which could be caused by the prolonged impact of the pandemic on access and quality of health services and the community's economy. In 2023, the stunting rate will again increase significantly to 17.43% (13),(14). This shows that there is a gap in actors, whether government, private sector, educational institutions, or actors who are involved in handling stunting.

The increase in the stunting rate in Jeneponto Regency reached its peak in 2019. This is not only about poor child rearing patterns, but there are several factors that cause the high stunting rate. This high stunting rate could be triggered by the COVID 19 phenomenon in 2019 (17), where COVID 19 has an impact on increasing stunting (18),(19). The COVID 19 pandemic has had a significant impact on increasing stunting rates, especially in developing countries including Indonesia (20). COVID 19 has had an impact on disrupting health services (21). During the pandemic, many health services experienced problems, including immunization health services, child growth checks and other health services, as a result, many children did not get the health care they needed (22).

Apart from COVID 19, one of the factors causing the high stunting rate is economic factors (23). The poverty rate has a relatively high contribution to the increase in stunting cases (24). The high poverty rate in Jeneponto occurred in 2021 with the number of poor people being 52.35% and in 2022 experiencing a slight decrease with the number of poor people being 50.59% (25). The high poverty rate in Jeneponto Regency is one of the triggers for the high prevalence of stunting.

Apart from that, a mother's level of education can also have a significant influence on the high rate of stunting in children(26). This is similar to the findings of study entitled A review of child stunting determinants in Indonesia which revealed that maternal education has an influence on the determinants of stunting (27). Mothers with limited education tend to have inadequate knowledge about the importance of balanced nutrition and good parenting practices (28),(29). Low levels of knowledge have an impact on the quality of children's nutritional intake (30). This often results in inadequate diets and a lack of understanding about the importance of exclusive breastfeeding and nutritious complementary foods. In addition, less-educated mothers may also be unaware of the importance of immunizations, good sanitation, and disease prevention and management, all of which play a role in increasing the risk of recurrent infections and illnesses that can stunt a child's growth (31). Lack of access to adequate health information and medical services, which is often related to low socio-economic status, also exacerbates this condition. As a result, children of mothers with low education are more vulnerable to stunting, a condition that can have long-term impacts on their physical and cognitive development (32). Increasing maternal education and

providing wider access to health information are important steps in efforts to reduce the prevalence of stunting in society (33).

3.2 Roles of Actors Involved

In reducing the prevalence of stunting in Jeneponto Regency, there are several actors involved in overcoming the prevalence of stunting. This can be seen in Figure 2.

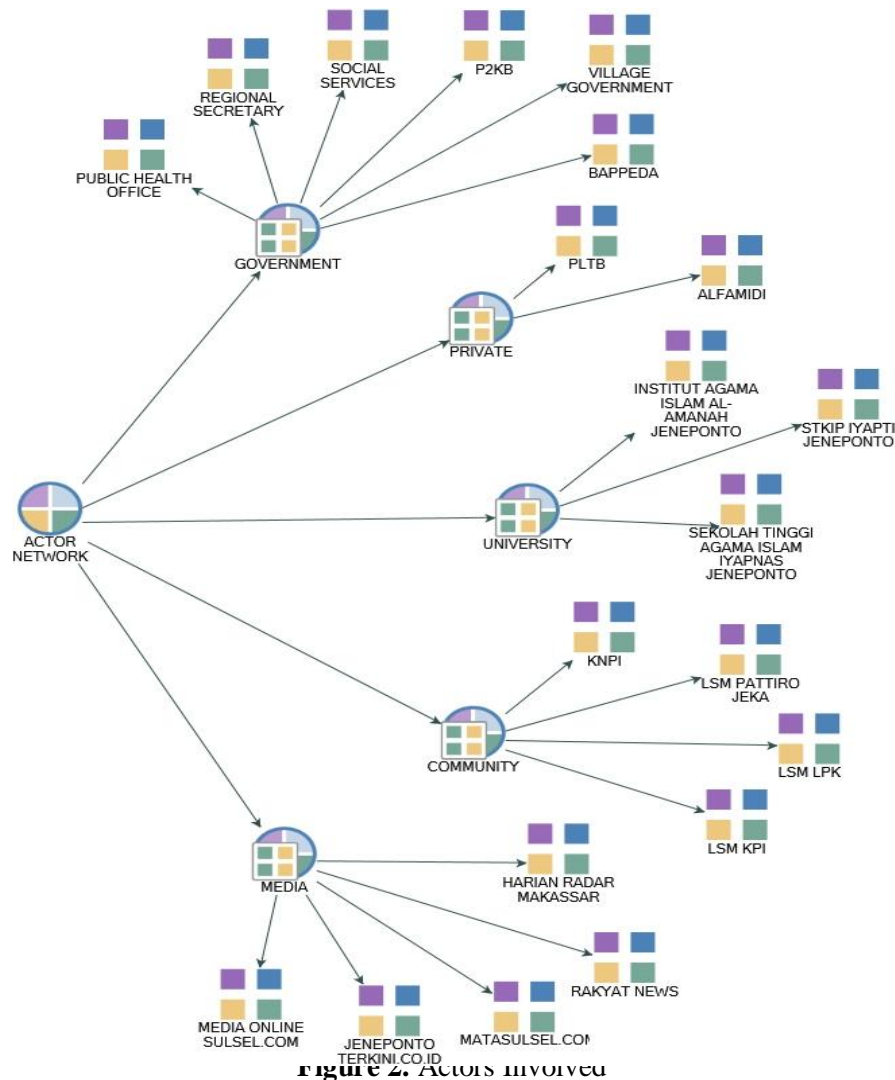


figure 2. Actors involved

The first actor is the government consisting of the health service, regional secretary, Social Service, Population and Family Disaster Control Service (P2KB), village government, and BAPPEDA (regional development planning agency). The health department focuses on providing health services to communities involved in public health programs such as immunization, outbreak management, and health promotion (34),(35). In combating stunting, the health service plays a key role in providing health services such as health education, nutritional monitoring, providing nutritional supplements to pregnant women and children who are susceptible to stunting. The regional secretary as a representative of the regional government, the regional secretary plays an important role in coordinating policies between various departments and ensuring that government programs run according to plans (36).

In preventing stunting, it plays a role in coordinating cross-sectoral programs at the regional level, and ensuring that policies and programs for handling stunting are implemented effectively in the various regions involved (37). Social services are responsible for social welfare programs, including assistance to vulnerable groups, poverty alleviation programs,

and other social services (38). In terms of tackling stunting, social services play a role in providing social assistance to poor families or families who are at risk of experiencing stunting, such as food assistance programs and health benefits. P2KB Service (population control and family planning), this agency plays a role in programs that focus on empowering women and families, including family planning programs, reproductive health, and improving family welfare (39).

In terms of its role in preventing stunting, the P2KB Service focuses on educating and empowering women, especially on family planning, providing adequate nutrition during pregnancy and good nutrition after giving birth. BAPPEDA (regional building planning agency), this agency has the task of carrying out regional development planning, including formulating policies, carrying out strategic planning, and monitoring the implementation of development programs (40). In preventing stunting, BAPPEDA has a role in planning and allocating resources for stunting prevention programs, and monitoring the effectiveness of programs that have been implemented. The village government has responsibility for management and administration at the village level, the village government implements government policies at the local level and collaborates with various actors to develop the village(41). In terms of stunting prevention, the village government plays a role in implementing stunting programs at the village level, such as training posyandu cadres, providing education to the community, especially pregnant women and mothers with children.

Apart from government actors, industrial or private actors are also involved in tackling stunting in Jeneponto Regency, the role of industry in tackling stunting is by participating in providing nutritious food assistance as a form of Corporate Social Responsibility (CSR). In the industrial or private sectors involved in preventing stunting in Jeneponto Regency, they consist of PLTB (Wind Power Plant) and Alfamidi mini market. PLTB (Wind Power Plant), apart from being connected to the government, and providing a source of electricity, the private sector also participates in community health improvement programs as part of their CSR initiatives (42), for example by supporting infrastructure or providing health services such as building posyandu, developing healthy communities, distributing additional food to pregnant women and children. Alfamidi As a representative of the retail sector, Alfamidi is involved in CSR (Corporate Social Responsibility) programs or as a partner in providing logistics and distribution of goods, playing a role in supporting campaigns and programs to handle stunting through CSR activities, such as providing healthy food and nutritional supplements for underprivileged families.

The third actor involved in tackling stunting in Jeneponto Regency is from educational institutions or universities. Universities have a very important role in the life of society and the country (43),(44). As higher education institutions, universities are responsible for providing education that focuses not only on theoretical knowledge, but also on practical skills relevant to the world of work. In addition, universities function as study and innovation centers, which contribute to the development of science and technology that can provide solutions to various global and local problems.

Through community service, the university applies study results and knowledge for the betterment of society, while maintaining cultural values and promoting intercultural dialogue. No less important, universities also play a role in shaping student character and leadership, preparing them to become individuals with integrity and responsibility. With these roles, universities become institutions that not only educate individuals, but also encourage overall social progress and development. In terms of preventing stunting in Jeneponto Regency, there are three universities involved in preventing stunting in Jeneponto Regency, namely the Al-Amanah Islamic Institute Jeneponto, STIKIP YAPTI Jeneponto, and the YAPNAS Jeneponto Islamic College. In terms of stunting prevention, this university has a

role by conducting study related to the causes of high stunting rates, providing education to the community regarding stunting, and helping by involving their human resources, both lecturers and students, to be involved in stunting prevention programs in the Jeneponto Regency.

The fourth actor who has a role in preventing stunting in Jeneponto Regency is the Non-Governmental Organization (NGO) or community. Non-governmental organizations or communities play a very important role in the social, economic and political life of society (45). NGOs are non-governmental organizations founded by a group of people to achieve certain social goals, such as human rights advocacy, environmental conservation, community empowerment, or improving health and education(46). NGOs usually operate independently of governments, although they often collaborate with government agencies or international organizations to achieve their goals. The roles of NGOs are very diverse, from providing direct services to the community, conducting study and advocacy, to monitoring public policy and ensuring government accountability. The NGOs or non-governmental organizations involved in tackling stunting in Jeneponto Regency are KNPI (Indonesian National Youth Committee), Pattiro Jeka NGO, LPK NGO (family empowerment agency), and KPI NGO (Indonesian Empowerment Committee).

NGOs in dealing with stunting have a very important role in overcoming stunting, a condition that inhibits children's growth due to chronic malnutrition. Through various educational programs, NGOs raise public awareness about the importance of proper nutrition for pregnant women and children, and encourage behavioral changes in diet and child care. NGOs also provide direct services, such as distribution of nutritious food and vitamin supplementation, and support government health programs. In addition, NGOs are active in policy advocacy to ensure the government allocates adequate resources and implements effective policies in dealing with stunting. They also empower communities by providing training to posyandu cadres and families, as well as supporting local food security programs. Through study and monitoring, NGOs identify vulnerable areas and design targeted interventions. With strong partnerships with various parties, NGOs contribute significantly to multi-sectoral efforts to reduce stunting rates, and ensure a sustainable impact for future generations.

The fifth actor involved in tackling stunting in Jeneponto Regency is a media actor. Media has a very important role in modern society, because it functions as a bridge of information between various groups and individuals. One of the main roles of the media is as a source of information (47). The media provides news, reports and analysis that enable people to know what is happening around them and around the world. It helps individuals make better decisions in everyday life, from political decisions to lifestyle choices. In addition, the media functions as a social watchdog. In this role, the media monitors the actions of governments, companies and other institutions, and reports irregularities or injustices that occur.

In this way, the media contributes to maintaining transparency and accountability, as well as encouraging better governance and social justice. The media also plays an important role in shaping public opinion (48). Through various platforms, the media conveys various views and perspectives that can influence the way society views certain issues. This formed public opinion can influence public policy and government decisions, as well as shape culture and social norms. Apart from that, media plays a role in the world of education and knowledge development. By disseminating scientific, cultural, and historical information, the media helps increase public understanding of important issues. Educational programs, documentaries and in-depth reporting are a means of educating the public and fostering critical thinking. No less important, media functions as a means of entertainment. Through

films, music, television shows, and other content, media provides entertainment that is important for an individual's emotional and mental well-being.

Entertainment provided by the media also plays a role in enriching culture and encouraging creativity. In the digital era, the role of media is increasingly expanding with the existence of social media platforms that enable active participation from the public. Social media not only functions as a communication channel, but also as a tool to mobilize social action, mass mobilization, and disseminate information quickly and widely. Overall, the role of the media is very important in shaping and influencing various aspects of people's lives. Media not only conveys information, but also shapes social reality, maintains accountability, educates and entertains, thus becoming an important pillar in modern social and political structures.

In terms of tackling stunting in Jeneponto Regency, there are five media that play a role in disseminating information related to stunting to the public, and helping increase public awareness about the importance of good nutrition and early intervention to prevent stunting, these media are Harian Radar Makassar, Rakyat News, Mata SULSEL.com, Jeneponto terkini.co.id, and Media Online SULSEL.com. The media plays a crucial role in tackling stunting by disseminating important information and educating the public about child nutrition and health (49). Through news, campaigns and educational programs, the media helps increase public awareness about the causes and impacts of stunting, as well as ways to prevent it (50). In addition, the media can highlight the efforts and policies of the government and Non-Governmental Organizations (NGOs) in overcoming stunting, encouraging accountability, and ensuring that this issue remains a national priority. By using various platforms, the media also functions as an effective advocacy tool to encourage behavior change at the individual and community level, thereby accelerating efforts to tackle stunting more broadly and sustainably.

3.3 Causes of Stunting in Jeneponto Regency and Recommendations Needed

The high stunting rate in Jeneponto Regency is strongly influenced by several factors, including supervision, awareness, marriage, innovation, CSR, education, family, budget, socialization and the environment. Details of this cause can be seen in Figure 3.

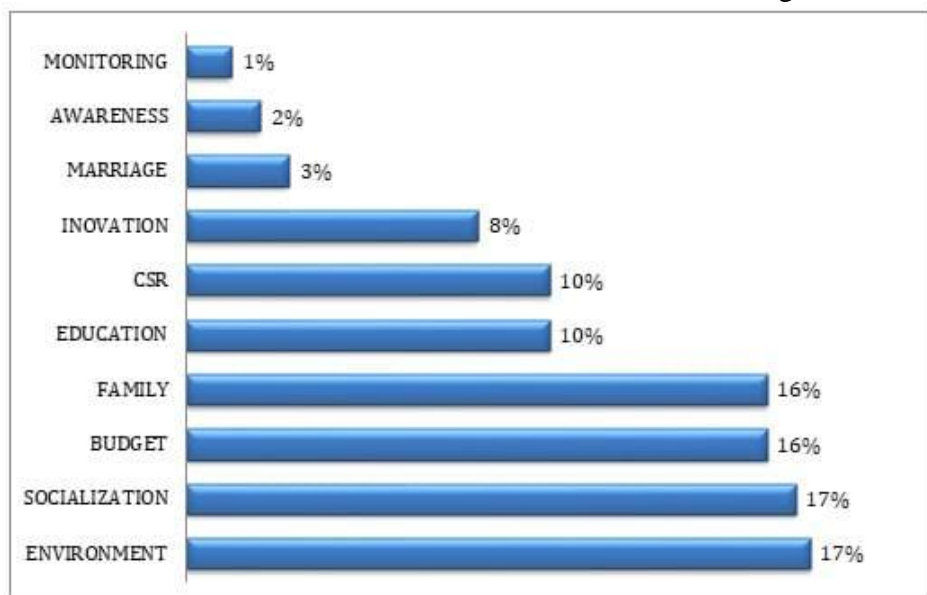


Figure 3. Reason Stunting in Jeneponto Regency based on processed results by Nvivo 12 Plus

One of the dominant factors is the environment, where the environment plays very important role in stunting. Poor environmental conditions, such as inadequate sanitation, lack of access to clean water, and pollution, can cause recurrent infections in children (51),(52).

Infections such as chronic diarrhea due to contaminated water can inhibit the absorption of important nutrients, thereby worsening nutritional conditions and causing stunting. A healthy environment with good sanitation and access to clean water is very important in efforts to prevent stunting (53).

On the other side, effective socialization about the importance of nutrition, health and hygiene is very crucial in preventing stunting, and vice versa, if socialization is not carried out enough, it will affect the level of public knowledge about stunting, resulting in many mothers not knowing what good child care patterns are. Socialization can increase public knowledge about good eating patterns, exclusive breastfeeding practices, and the importance of immunization. Without good outreach, many families may not realize the importance of these factors, which can lead to an increased risk of stunting in children (54).

The budget allocated for health programs, nutrition, and infrastructure development that supports health greatly influences success in preventing stunting. Budget limitations are often the main obstacle in providing quality health services, nutrition programs, and adequate sanitation facilities (55). Sufficient investment in these sectors is needed to significantly reduce the prevalence of stunting. Therefore, larger and more efficient budget allocations in health, nutrition and infrastructure development programs are key to achieving sustainable results in overcoming stunting and improving overall community welfare.

The role of the family is very central in child development, including preventing stunting. Families who have adequate knowledge and resources are more likely to be able to provide nutritious food, support exclusive breastfeeding, and ensure their children receive necessary health care.(56). On the other hand, families with limited knowledge or economic conditions may have difficulty providing basic needs that can prevent stunting. Therefore, empowering families through education and economic support is very important to ensure that every child gets the nutrition and care needed to grow and develop optimally.

Education of mothers and other family members about nutrition and health is a key factor in preventing stunting. Educated mothers tend to have better knowledge about the importance of nutritional intake during pregnancy and the child's growth period (56),(57). Effective education programs can reduce stunting rates by increasing awareness about the importance of adequate nutrition and good health practices. Thus, investment in health education programs for mothers and other family members is critical to creating a long-term impact in preventing stunting and improving overall child health.

Corporate Social Responsibility (CSR) from companies can contribute to tackling stunting by supporting health, nutrition and education initiatives (58),(59). Companies may provide financial support or other resources for programs focused on improving the well-being of children in their communities. Companies' involvement in CSR not only helps overcome the problem of stunting but also strengthens their relationships with communities. By investing in health and education programs, companies can create a positive and sustainable impact on children's development and the general well-being of society.

A lack of innovation has also been identified as affecting stunting rates in Jeneponto. Innovations in health technology, nutrition programs, and other interventions can provide new and effective solutions to prevent stunting (60). This innovation could be in the form of a health application that makes it easier to monitor children's nutrition, more affordable sanitation technology, or the development of nutrient-rich food or innovation in better breastfeeding patterns. In addition, marriage, especially early marriage, contributes to stunting because it is often followed by pregnancy at a young age, where adolescent girls' bodies are not yet fully developed to support a healthy pregnancy (61). Mothers who become pregnant as teenagers have a higher risk of experiencing pregnancy complications, such as anemia and hypertension, which can affect fetal growth and increase the risk of giving birth to a low birth weight baby (62). Babies born with low birth weight have a higher risk of

experiencing stunting in the future. lack of family planning and access to reproductive health services are also contributing factors.

Apart from that, other factors such as low public awareness also influence the stunting rate in Jeneponto. Public awareness about the importance of preventing stunting and monitoring the implementation of stunting prevention programs is very important, even though their contribution is relatively small according to this graph. Low awareness can lead to minimal preventative action and early treatment of stunting, while weak monitoring can hamper the effectiveness of programs that have been implemented (63). Therefore, increasing public awareness and strengthening monitoring mechanisms are important steps to ensure that stunting prevention programs can be implemented effectively and provide significant results.

Another factor that influences the stunting rate in Jeneponto is limited and weak monitoring. Inadequate monitoring can hinder early identification and handling of problems, as well as reduce the effectiveness of stunting prevention programs that have been implemented. Without a strong monitoring system in place, it is difficult to evaluate progress, identify deficiencies, and make the necessary adjustments to achieve optimal results. Therefore, improvements in monitoring systems are critical to improving the performance of stunting prevention programs and ensuring that every child gets the interventions they need to grow healthily.

This study further maps out several necessary policy recommendations to prevent the increase in stunting that occurs from year to year. In this case, recommendations for actions that need to be realized are needed from government, industrial or private actors, educational institutions, non-governmental organizations and the media. For this reason, the following are the results of study obtained in the field which can be used as recommendations for what stakeholders need to reduce prevalence of stunting in Jeneponto Regency.

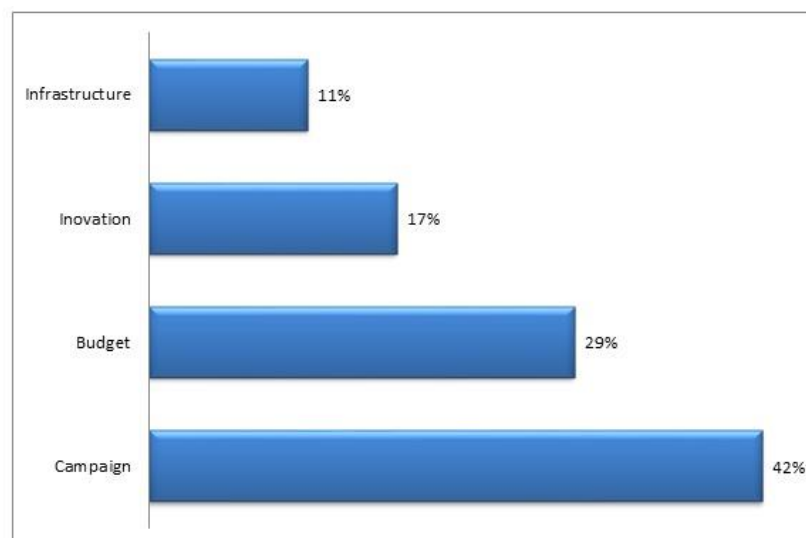


Figure 4. Recommendations needed, processed images from Nvivo 12 Plus

Figure 4 outlines the key recommendations which are considered important for reducing the prevalence of stunting in Jeneponto Regency, each with different priority weights. Each element has a significant role in creating a comprehensive approach to overcoming the problem of stunting, which is a condition of failure to thrive in children due to chronic malnutrition, recurrent infections and inadequate psychosocial stimulation.

Campaign has the greatest priority weight, indicating that public education and awareness is considered the most critical step. In this context, campaigns can include various initiatives such as disseminating information about the importance of balanced nutrition,

good hygiene practices, and the need for early stimulation for children. Effective campaigns can mobilize communities to pay more attention to their children's nutrition and encourage behavioral changes that support optimal growth and development (64). This can also include working with media, influencers and communities to expand the reach of the message.

Budget allocation is an important component in preventing stunting. Providing an adequate budget allows the government and related organizations to carry out programs that support improved nutrition, such as providing additional food for pregnant women and children, as well as health programs that focus on preventing and managing stunting (65). Apart from that, an adequate budget is also needed for training health workers, distributing nutritious food supplies, and developing affordable and easily accessible health facilities.

On the other hand, Innovation also emphasizes the importance of new and creative approaches in fighting stunting. Innovation can include the development of new technology in the health and nutrition sector, such as mobile applications to monitor children's growth, or the development of nutrient-rich food products that are affordable and easily accessible to low-income communities (66). Innovations in educational methodology, such as interactive learning modules for young mothers, can also contribute to increased understanding and implementation of good nutritional practices.

Another crucial aspect is the fulfillment of infrastructure whose value is an important element (67). Infrastructure development and improvement is crucial to ensure that every family has adequate access to clean water, proper sanitation and health facilities (68). Without adequate infrastructure, even the best campaigns or innovations will be ineffective. For example, without access to clean water, the risk of intestinal infections increases, which can interfere with nutrient absorption and contribute to stunting. Therefore, even though the percentage is small, infrastructure remains an essential foundation for the success of stunting reduction strategies.

These findings are illustrative that an integrated approach, involving various aspects such as education, funding, innovation and infrastructure, is the key to reducing the prevalence of stunting. The greater focus on campaigns and budgets shows that, while infrastructure and innovation are important, the main focus now is on changing people's behavior and financial support for stunting reduction programs. This reflects the holistic approach needed to address the complexity of the stunting problem, which requires not only technical solutions but also sustainable social and policy change.

In the context of reducing the prevalence of stunting in Jeneponto Regency, the collaborative approach of Quadruple Helix and Quintuple Helix Innovation is very relevant. The Quadruple Helix approach involves collaboration between government, the private sector, academia and society, while the Quintuple Helix adds environmental elements as an important factor. By integrating this approach, key recommendations such as educational campaigns, budget allocation, innovation, and infrastructure compliance can be more effectively implemented. For example, the government can work with the private sector to provide adequate budgets and innovation in health technology, while academia can develop relevant educational modules. The public can also be actively involved in awareness and monitoring campaigns.

Strengthening the multi-actor approach through Quadruple and Quintuple Helix collaboration ensures that all aspects needed to tackle stunting from community education to infrastructure development can support and strengthen each other. This collaboration allows the utilization of resources and expertise from various parties, so that the strategy implemented is not only more comprehensive but also more sustainable. By combining efforts between awareness campaigns, appropriate budget allocation, technological innovation, and infrastructure development, this approach can create integrated solutions that

are more effective in reducing the prevalence of stunting and improving the welfare of children in Jeneponto.

4. CONCLUSION

The stunting rate in Jeneponto Regency is very worrying, and has prompted various efforts to be considered. This study identified several dominant causes that influence the prevalence of stunting, including the environment, socialization and limited budget capacity. This study highlights the need for collaboration between actors, including government actors, industry, educational institutions, non-governmental organizations and the media. The findings of this study also show that reducing the prevalence of stunting in Jeneponto Regency requires a holistic approach involving educational campaigns, adequate budget allocation, technological innovation, and infrastructure fulfillment. Top priority should be given to awareness campaigns and budget allocation, with additional support from innovation and strong infrastructure development.

A collaborative approach through Quadruple Helix and Quintuple Helix Innovation, which involves cooperation between government, the private sector, academia and society and considers environmental factors, is essential to ensure effective and sustainable implementation. By integrating these various aspects, the strategy implemented can be more comprehensive and able to overcome the complexity of the stunting problem as a whole. The limitations of this study lie in the research method which only relies on a qualitative approach, without considering quantitative data which can provide additional perspectives. The use of quantitative methods, such as surveys or statistical analysis, can provide a more objective measure of the prevalence of stunting and the factors that influence it. Future studies are expected to integrate quantitative approaches, providing more comprehensive and representative results regarding the effectiveness of various interventions in overcoming stunting.

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