Research paper

Efforts to Accelerate Stunting Reduction in Tegal City, Indonesia

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ABSTRACT

Background: One of the problems currently faced by Indonesia is nutritional problems in the form of stunting. Stunting is a disruption in the growth and development of children due to chronic malnutrition and recurrent infections, characterized by their length or height being below the standard.

Methods: This descriptive research aimed to describe the condition of stunting in Tegal City and the efforts of the Tegal City government in contributing to the reduction of the stunting rate.

Results: This activity has shown good results, this can be seen from the reduction in the stunting rate in Tegal City from 9.94% in 2022 to 8.21% in 2023. The program to reduce stunting rates in Tegal City was established through the formation of the stunting reduction acceleration team (SRAT). Some of the activities carried out by SRAT include sensitive services linked to poverty management program activities, such as providing integrated healthy livable houses, interventions in the use of yard land, expanding family planning acceptors, refining social assistance recipients, and providing access to drinking water and sanitation management. Specific services are carried out by strengthening specific interventions on a provincial scale, enhancing communication and behavior change by strengthening communication and behavior change and planning and monitoring the evaluation of regional apparatus organizations' program integration. Collaboration with potential partners is also key in accelerating stunting reduction, along with ongoing monitoring and evaluation of performance. This activity has shown positive outcomes, as evidenced by the reduction in the stunting rate in Tegal City from 9.94% in 2022 to 8.21% in 2023.

Conclusion: The prevalence of stunted children in Tegal City has decreased. Effective leadership, a strong civil society, and targeting vulnerable communities during the implementation of specific and sensitive nutrition interventions are the main factors that support the achievement of these targets.

Keywords: Acceleration, Effort, Indonesia, Reduction, Stunting

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Introduction

To achieve the goal of advanced Indonesia 2045, every problem faced by this nation must be addressed collectively. One of the problems currently being faced by Indonesia is the nutritional problem in the form of stunting. The World Health Organization (WHO) defines stunting as a disruption in the growth and development of children due to chronic malnutrition and recurrent infections, characterized by their body length or height being below the standard [1].

This stunting problem is not limited to Indonesia; it also occurs in various countries. The WHO estimates that the prevalence of stunting (dwarfism in toddlers) worldwide was 22%, affecting 149.2 million people in 2020 [2, 3]. In Indonesia, based on data from the Asian Development Bank, the prevalence of stunting among children under 5 years of age was 31.8% in 2022, placing Indonesia in 10th place in the Southeast Asia region. Furthermore, in 2022, based on data from the Ministry of Health, Indonesia's stunting rate decreased to 21.6% [4-6]. Chronic malnutrition that occurs in early childhood is a cause of stunting, which adversely affects children's mental and physical development, and contributes to the intergenerational transmission of malnutrition and poor birth outcomes for the next generation. Stunting is an indicator of an inadequate birth and care environment and is associated with learning challenges and barriers to community involvement [7]. Therefore, the prevalence and severity of stunting are indicators used to assess populations and can be used to track the development of children in a population over time. It is estimated that 149.2 million children worldwide will experience stunting, which represents approximately 22% of all children aged up to five years [6, 8].

The problem of stunting has a significant impact on the future of children worldwide. Stunting can reduce the survival of children under five, affect school performance, and hinder community economic productivity. Stunted children, when they grow up, are at risk of producing lower-quality human resources. In a healthy population, approximately 2.5% of children have a z-score of <-2 based on the child's growth curve [9, 10]. If this percentage exceeds 2.5%, it indicates a growth problem. Stunting is a chronic condition resulting from poor nutritional status during growth and development from early life. Stunting is an obstacle caused by a lack of nutritional intake and health problems in stunted children, as determined by calculations based on the height index z-score value, with results falling below <-2 standard deviations. Stunting describes a chronic malnutrition situation in children that takes a long time to develop and recover, preventing the child from reaching normal height for their age [11-13].

Stunting is a nutritional problem worldwide, with around 165 million children under five affected. Also, 80% of children with stunting are widespread in 14 countries in the world, with Indonesia ranking fifth in the number of stunting cases. Data on stunting in Indonesia shows that the national prevalence increased from 35.6% (2010) to 37.2% (2013), and then decreased to 30.8% in 2018. Additionally, data from nutritional status monitoring in 2017 indicates that the percentage of stunted toddlers in the toddler group (29.6%) is greater than that of infants (20.1%) [14-16].

Linear growth in a child is an indicator of children's well-being. Child well-being provides an accurate marker of differences in human growth and development. This tragic fact impacts millions of children around the world, who are not only hindered in reaching their potential for physical growth and mental development due to suboptimal health conditions and inadequate nutrition and care but also suffer irreversible physical and cognitive damage associated with stunted growth [11, 17].

Bearing in mind the importance of this problem, the president of the Republic of Indonesia, in his remarks at the opening of the national working meeting on the family, population, and family planning development program (Banggakencana) and stunting reduction at the Halim Perdanakusuma BKKBN Auditorium Jakarta on 25 January 2023, stated that the impact of stunting is not merely a matter of height and the most concerning effects are the child's low ability to learn and the emergence of chronic diseases that can easily affect the child's health [18, 19]. Therefore, it is hoped that the target percentage of stunting in Indonesia will decrease to 14% by 2024. The President of the Republic of Indonesia also believes that with collective effort, this target is achievable, as long as everyone works together [19].

To address the stunting problem, the central and regional governments are implementing a convergence action plan consisting of eight stages, including: Identifying the distribution of stunting, assessing program availability and obstacles in the implementation of integrated nutritional interventions, developing activity plans to enhance the implementation of integrated nutritional interventions, organizing district/city-level stunting discussions, providing legal certainty for vil-

lages to fulfill their roles and authority in integrated nutrition interventions, ensuring the availability and functioning of cadres who assist village governments in implementing integrated nutrition interventions at the village level, improving the stunting data management system and intervention coverage at the district/city level, measuring the growth and development of children under five, and publishing district/city stunting figures, as well as reviewing the performance of programs and activities related to reducing stunting over the past years [11, 12, 14].

Stunting is still a serious health problem faced by Indonesia. Based on data from the 2022 national nutrition status survey (SSGI), the prevalence of stunting in Indonesia is 21.6%. This number represents a decrease from the previous year, which was 24.4%. Although it is declining, this percentage is still high, especially considering that the target for stunting prevalence in 2024 is 14% and the WHO standard is below 20% [17, 19].

Stunting is caused by various factors, one of which is a lack of important intakes, such as animal, and vegetable protein and iron, from before birth to after birth. This deficiency in babies being born with poor nutrition leads to stunting in children. To overcome this problem, the Ministry of Health is campaigning for the importance of giving animal protein to children, especially children under two years of age. After the baby reaches six months old, it is essential to regularly monitor their growth. Animal protein sources that can be consumed include milk, eggs, fish, and chicken. These foods are suitable options for stunted children because animal protein contains complete nutrients, such as amino acids, minerals, and vitamins, which are crucial for supporting children's growth and development [4, 6]. This is supported by research results that provide strong evidence of a relationship between stunting and indicators of food consumption derived from animals, such as eggs, meat/fish, and milk or processed products (cheese, yoghurt, etc.). This research also shows that consuming food derived from more than one type of animal protein is more profitable than consuming food derived from a single source. Unfortunately, despite its effectiveness in preventing stunting in children, per capita protein consumption remains relatively low. The average daily per capita protein consumption is 62.21 grams (above the standard of 57 grams); however, the consumption of eggs and milk is 3.37 grams, meat is 4.79 grams, and fish/shrimp/squid/shellfish account for approximately 9.58% [8, 18].

In Indonesia, the incidence of stunting was 24.4% in 2021 and decreased to 21.6% in 2022. Additionally, the rates for other nutritional issues in 2022 included 7.7% for wasting, 17.1% for underweight, and 3.5% for overweight. In 2022, Central Java Province ranked 7th from the bottom with a stunting rate of 16.8%. Although this figure has decreased compared to 2021, it is still above the target. In Tegal City, the incidence of stunting increased from 5.51% in 2021 to 9.94% in 2022 [4, 11, 12].

Conditions that have the potential to increase the prevalence of low birth weight (LBW) also rose, from 5.2% in 2016 to 6.12% in 2020. Many factors contribute to stunting in children. For example, the frequency of pregnant women with chronic energy malnutrition (CED) increased from 10.7% in 2017 to 12.96% in 2020. Conditions that have the potential to increase the prevalence of LBW also increased from 5.2% in 2016 to 6.12% in 2020. Additionally, blood tablet coverage for pregnant women decreased from 90.4% in 2016 to 87.9% in 2020, while antenatal care (ANC) declined from 92.2% to 86.9% in 2020. The percentage of births in health facilities decreased from 99.8% in 2016 to 99.6% in 2022, and the rate of underweight toddlers increased from 4.05% in 2016 to 4.1% in 2020 [14]. The rate of anemia in pregnant women also increased from 14.32% in 2017 to 15.84% in 2020 [18].

This research aimed to analyze the stunting reduction program in Tegal City and its achievements.

Methods

This descriptive research analyzed policies and programs that are specific and sensitive to nutrition, as well as the process involved in collecting and analyzing the data. Data analysis was used to find out the programs implemented in preventing stunting carried out through a review of existing data. Data were obtained from four sub-districts and 27 villages. The validity of the data was then identified through clarification to the health service where the data were collected. After obtaining clarification, interviews were then conducted with 32 stakeholders to obtain more in-depth information regarding the programs that had been implemented by the government. Sampling for the review was carried out using total sampling across all clinical settings in the 4 sub-districts and 27 villages. Data collection was used to describe policies and programs through desk reviews and to explain stunting prevention programs, including both sensitive and specific interventions. The subjects of the interviews included sub-district heads, midwives, community health cadres, and heads of community health centers. Indi-

viduals involved in the government's stunting program were selected as interview samples. A statistical analysis of quantitative data was used to determine trends in the prevalence of stunting in toddlers up to five years of age, and it was done using SPSS software, version 20.

Results

The national stunting incidence rate has decreased every year, however, this figure is still above the target set by the stunting reduction program (Figure 1).

Data from the Tegal City Health Service indicated that the incidence of stunting in toddlers was 8.21%, with rates of wasting at 8.38%, underweight or thin toddlers at 13.49%, LBW babies at 6.38%, exclusive breastfeeding coverage at 65.89%, and anemia in pregnant women at 16.46%.

Figure 1 also shows stunting data in the Tegal City area, revealing that the incidence of stunting in Tegal City has increased from 5.51% in 2021 to 9.94% in 2022, but decreased again in 2023 to 8.21% as of February 2023.

Table 1 shows that the incidence of stunting in Tegal City in 2023 was 1,002 children under five (8.21%), with the highest rates occurring in the Sumur Panggang sub-district at 14.51%, Kalinyamat Kulon sub-district at 13.06%, Debong Tengah sub-district at 11.96%, and Debong Kulon village at 11.71%. These four sub-districts account for the highest number of stunting incidents in Tegal City.

Indonesia is committed to addressing the prevalence of stunting, as evidenced by the existence of presidential regulation number 72 of 2021 concerning the acceleration of stunting reduction in Indonesia. This regulation includes strategies such as reducing the prevalence of stunting, improving the quality of family life preparation, ensuring the fulfillment of nutritional intake, enhancing parenting practices, improving access to and the quality of health services, and increasing access to drinking water and sanitation. It is hoped that this presidential regulation will further accelerate progress in reducing stunting, which aligns with the scaling up nutrition (SUN) strategy.

The following outlines the flow of the Audit Kasus stunting (AKS) team's implementation and the role of the family support team in accelerating stunting reduction. The AKS is a team assigned to monitor and assess national stunting cases. The AKS flow and family support can be seen in Figures 2 and 3.

In the stunting reduction acceleration program, the provision of Pemberian Makanan Tambahan (PMT) activities is consistently carried out effectively. PMT refers to activities that provide additional nutrition for children. The PMT given to stunted toddlers is processed and packaged appropriately to meet their specific needs (Figure 4). By 2023, Tegal City will have established four healthy kitchens in quality family villages.

Discussion

The national strategy to accelerate stunting reduction is implemented through five pillars and eight convergences aimed at addressing stunting through sensitive and specific interventions [16, 20]. These pillars were 1) Laws and regulations, 2) Policies, 3) Initiatives, 4) Support for national regulations, and 5) The commitment of regional governments at the district/city level. Strategic efforts implemented by the Tegal City government began with the establishment of the Tegal City stunting reduction acceleration team (SRAT).

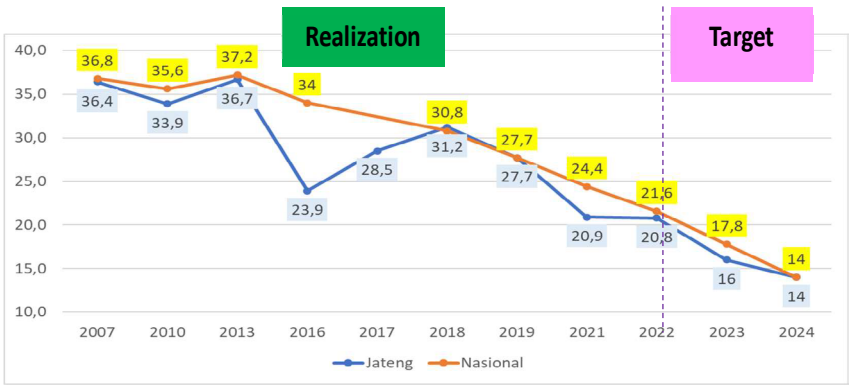

Figure 1. Stunting prevalence and targets

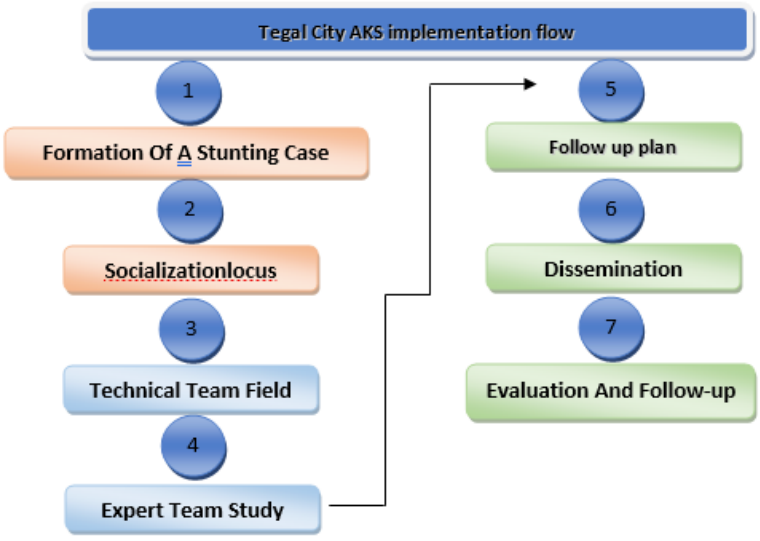

Figure 2. The AKS implementation flow

Several activities carried out by the SRAT include sensitive services related to poverty management program activities, such as the provision of integrated healthy livable houses, interventions in the use of yard land, expansion of family planning acceptors, refinement of social assistance recipients, and the provision of access to drinking water and sanitation management. Specific services are carried out by strengthening targeted interventions on a provincial scale (primarily in the health sector). This includes communication and behavior change initiatives, planning and monitoring evaluations, integration of the targets from presidential decree 72/2021 into the program and activity targets of regional apparatus organizations, selection of intervention priority targets based on PK21 results, review of gubernatorial decree 34/2019 concerning the acceleration of stunting prevention, collaboration with potential partners in the context of accelerating stunting reduction (including UNICEF, Tanoto Foundation, universities, NGOs, BAZNAS, and corporate CSR), and monitoring and evaluating performance based on the targets set in presidential decree 72/2021. Additionally, data and knowledge management efforts focus on increasing the coverage and quality of data collection. Multisector interventions have the potential to produce reductions in childhood stunting, as demonstrated by other countries [21]. The stunting reduction acceleration program is implemented with a family assistance team consisting of 633 members

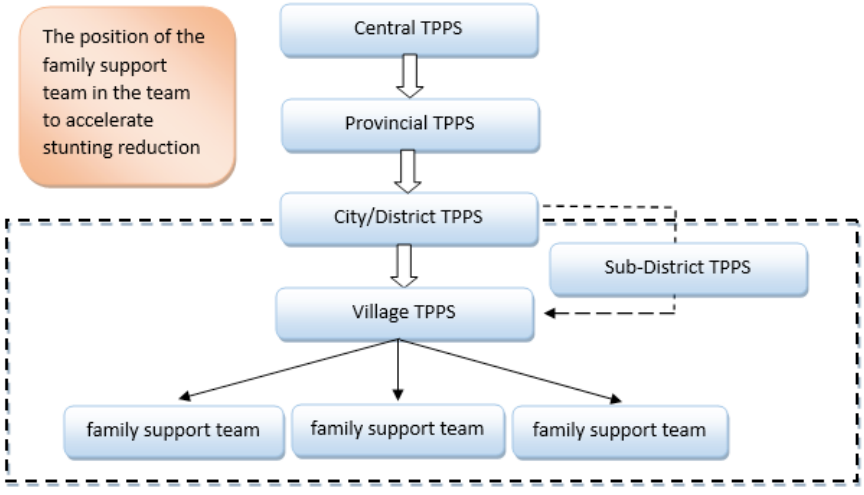

Figure 3. The role of the family support team in accelerating stunting reduction

Figure 4. Family assistance flow and application

divided into 211 groups. This team includes health professionals responsible for providing health services and serving as coordinators of the family assistance team in efforts to accelerate stunting reduction.

The stunting reduction acceleration program is implemented with a family assistance team consisting of 633 people divided into 211 groups. This team includes health professionals responsible for providing health services and serving as coordinators of the family assistance team in efforts to accelerate stunting reduction. Additionally, family welfare cadres are tasked with mediating and supporting families in their efforts to reduce stunting, while family planning cadres assist families in these efforts as well. This aligns with other studies that actions to reduce stunting require improvements in food and nutrition security, education, WASH (water, sanitation, and hygiene interventions), health, poverty reduction, and the status of women [22]. The Tegal City government formed a stunting case audit team to identify stunting cases and intervene in those that require it. Moreover, the targets for Bapak Asuh Anak stunting (BAAS) activities include Catin, pregnant women, and children aged 0 to 23 months. BAAS involves engaging parents, especially fathers to play an active role in controlling stunting by increasing their knowledge and participation in family matters, such as food preparation and environmental sanitation. The BAAS activity currently underway involves providing additional food (PMT) in the form of two eggs per day for six months. Another activity carried out in the BAAS program is meeting clean water needs [6, 15, 18].

The general task of the family assistance team is to assist the priority targets of family assistance, which include counseling, facilitation of referral services, and facilitation of acceptance of social assistance programs, as well as ongoing surveillance/observation to detect early risk factors for stunting [7, 23, 24]. Specifically, the activities of the family assistance team include conducting screen-

Table 1. The prevalence of stunting in Tegal City

Sub-district	Village	Under Two Years	Short	Very Short	Stunting	% Stunting	Under Five Years	Short	Very Short	Stunting	% Stunting
Tegal Selatan	Kalinyamat Wetan	92	3	0	3	3.26	257	6	0	6	2.33
	Bandung	128	3	0	3	2.34	320	16	3	19	5.94
	Debong Kidul	83	1	0	1	1.2	207	20	0	20	9.66
	Tunon	129	4	0	4	3.1	293	27	1	28	9.56
	Keturen	88	2	0	2	2.27	249	13	0	13	5.22
	Debong Kulon	121	8	5	13	10.74	316	28	9	37	11.71
	Debong Tengah	282	14	9	23	8.16	694	56	27	83	11.96
	Randugunting	236	9	0	9	3.81	706	56	19	75	10.62
Tegal Timur	Kejambon	213	8	2	10	4.69	592	45	6	51	8.61
	Slerok	337	18	0	18	5.34	835	49	2	51	6.11
	Panggung	510	11	17	28	5.49	1.239	79	35	114	9.2
	Mangkukusuman	77	2	0	2	2.6	169	5	0	5	2.96
	Mintaragen	258	9	5	14	5.43	599	37	11	48	8.01
Tegal Barat	Pesurungan Kidul	158	9	0	9	5.7	414	25	4	29	7
	Debong Lor	66	2	0	2	3.03	240	22	2	24	10
	Kemandungan	62	1	0	1	1.61	161	9	1	10	6.21
	Pekauman	104	8	1	9	8.65	269	20	8	28	10.41
	Kraton	276	7	2	9	3.26	697	37	13	50	7.17
	Tegal Sari	468	4	7	11	2.35	1.094	41	19	60	5.48
	Muarareja	212	3	0	3	1.42	540	28	9	37	6.85
Mar-gadana	Kaligangsa	155	5	1	6	3.87	354	14	3	17	4.8
	Krandon	86	0	1	1	1.16	254	9	8	17	6.69
	Cabawan	104	2	0	2	1.92	241	7	3	10	4.15
	Margadana	367	9	9	18	4.9	672	52	16	68	10.12
	Kalinyamat Kulon	145	5	4	9	6.21	222	21	8	29	13.06
	Sumurpanggang	181	10	4	14	7.73	324	35	12	47	14.51
	Pesurungan Lor	95	3	3	6	6.32	243	18	8	26	10.7
Kota Tegal		5033	160	70	230	4.57	12.201	775	227	1.002	8.21

ings for 3 (three) months for Catin, providing education, and facilitating support for those with risk factors for stunting, addressing these factors, and offering assistance to all pregnant women through regular pregnancy checks and monitoring until delivery [25]. Midwives help with normal births, carry out early detection of risk factors, accompany and refer births with risks to appropriate health facilities, and provide postpartum care. They also offer communication, information, and education (CIE) regarding family planning, support postpartum mothers in utilizing postnatal family planning services, and carry out early detection of risk categories and complications during the postpartum period, facilitating referrals when necessary. Additionally, midwives provide care for newborns and assist in the care and development of children under five years (toddlers) by conducting screenings to assess risk factors for stunting. They facilitate babies to receive exclusive breast milk for six months and provide breast milk complementary foods (MPASI) to babies over six months of age with adequate nutrition and complete basic immunization according to schedule, while also facilitating families to receive social assistance [26-29]. This aligns with other studies that indicate factors associated with stunting include the child's age and the dominant livelihood practice in the community, emphasizing the importance of improving maternal, infant, and young child nutrition through organizing nutrition interventions both directly and indirectly, within and outside the health sector [30-32].

The National Population and Family Planning Agency (BKKBN) is an institution whose task is to control the population through implementing population and family planning programs, as well as improving the quality of Indonesia's human resources. The agency communicated other programs that have been implemented, involving SRAT, community organizations, agencies, and resource persons from the BKKBN representative of Central Java Province, as well as Bappeda of Tegal City. BKKBN's mandate is "to carry out government duties in the field of population control and the implementation of family planning. This activity is called BAAS, as outlined in circular number 441.8/001 of 2023. This program involves several stakeholders, including individuals, communities, academics, professional organizations, the business sector, mass media, civil society organizations, universities, community leaders, religious leaders, and development partners, all of whom are related to the acceleration of reducing stunting (article 1, presidential regulation number 72 of 2021 concerning the acceleration of reducing stunting) [26, 33].

Various efforts to reduce stunting have been made from various sectors, resulting in a decrease in the number of stunting incidents in Tegal City, although the decrease has not been significant. This may be attributed to the fact that in toddlers, stunting is related to the effects of chronic malnutrition experienced by the mother during pregnancy and the effectiveness of nutritional interventions during the first 1,000 days of life [4, 6].

The potential long-term effects include intergenerational stunting and intergenerational poverty, indicating that there are still social problems, such as poverty, inequality, and disparities. At the program level, the obstacles faced include difficulties in coordination, weak strategies, lack of stakeholder interest, unbalanced collaboration structures, limited human resources, and budget constraints [34, 35]. Meanwhile, at the household and individual levels, issues arise from common perceptions regarding the causes, obstacles, and challenges of stunting in Tegal City. These issues include maternal education, maternal knowledge and practices related to parenting and food diversity for toddlers, economic factors, poverty, and food security at the household level, as well as a high incidence of anemia among teenagers who are expectant mothers. Additionally, the lifestyle of Tegal City residents still pays little attention to nutritional needs, particularly during the first 1,000 days of life [14, 36, 37].

The experiences of several countries that have successfully reduced the prevalence of stunting are based on a strong government commitment to formulating policies and implementing them. This includes sustainable political commitment, a multisectoral approach, organizational regulations at all levels, and increased access to high-quality health services. The integration of sensitive and specific interventions has the potential to reduce the global prevalence of stunting by between 0.7 and 2.1% annually. Following the implementation of the stunting convergence action, the acceleration of stunting reduction in Yogyakarta reached 2.06% per year from 2018 to 2021, four times faster than the previous period (2007-2018), which saw a reduction of only 0.5% per year. Several countries are experiencing accelerated reductions in stunting at varying rates. For example, Maharashtra, India, saw a decrease of 2.6% [29, 38]. Nutrition was improved through the efforts of the national movement for the first 1000 days of life, which involved cross-sector partners. The Yogyakarta Special Region Government prioritizes stunting as a key issue, uniting all efforts across programs and sectors through a five-pillar national strategy and eight convergence actions [29, 38-40].

Conclusion

In conclusion, Tegal City is one of the cities that has been able to quickly reduce the prevalence of stunting in children under 5 years after a period of stagnation. This success can be due to various factors, including effective leadership, a strong civil society, and targeted efforts to support vulnerable communities during the implementation of specific and sensitive nutrition interventions. The capacity to govern in a supportive environment is characterized by the promotion of program initiatives, including effective and sustained political leadership, the active participation of civil society in the design and implementation of policies and programs, the emphasis on adequate accountability mechanisms at all levels, and the implementation of evidence-based interventions that extend beyond the sector and into sustainable practices. Although the stunting rate has decreased, improved coordination is still needed through multi-sectoral, multi-actor, and strategic collaboration to enhance human resources and budgets, as well as to improve parenting practices, food diversity, household food security, and to prevent early marriage.

Ethical Considerations

Compliance with ethical guidelines

The current study was approved by the Health Research Ethics Committee Universitas Gunung Jati (Code: 0176/KEPK/XII/2023). The participants provided written informed consent to take part in this study.

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Authors' contributions

Conceptualization and supervision: Okta Zenita Siti Fatimah, Fitriana Rakhimah, Elqy Mei Zumaro, and Satriya Pranata; Methodology: Resty Himma Muliani and Sa'adah Handayani; Data collection: Nilatul Izah and Yanyan Mulyani; Data analysis: Nilatul Izah and Satriya Pranata; Investigation, and writing: Nilatul Izah, Yanyan Mulyani, Nina Maria Desi, and Seventina Nurul Hidayah.

Conflict of interest

The authors declared no conflict of interest.

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