



## Empowering communities for sustainable stunting prevention: A comprehensive approach to enhance child nutrition and family health education

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### ABSTRACT

Stunting is a significant public health concern influenced by various factors, including education. Studies have shown that reducing the burden of stunting requires interventions that extend beyond focusing solely on children to reaching mothers and families to improve their living environment and nutrition. The purpose focuses on sustainable stunting prevention strategies in Malang City, Indonesia, to enhance child nutrition and family health. Stunting, a form of chronic malnutrition, has long-term consequences on children's growth, cognitive development, and overall health. We used the information from the NFHS 2019-2021 report on the National Family Health Survey. Addressing stunting in Malang requires a comprehensive approach that considers medical and nutritional aspects and factors like education, sanitation, environmental sustainability, and institutional capacity. By integrating these diverse elements into interventions and policies, Malang can work towards reducing stunting prevalence and improving the health and well-being of its population.

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### ABSTRAK

Stunting adalah masalah kesehatan masyarakat yang signifikan, dipengaruhi oleh berbagai faktor, termasuk pendidikan. Penelitian telah menunjukkan bahwa mengurangi beban stunting membutuhkan intervensi yang melampaui fokus hanya pada anak-anak untuk menjangkau ibu dan keluarga untuk meningkatkan lingkungan hidup dan gizi mereka. Tujuannya berfokus pada strategi pencegahan stunting berkelanjutan di Kota Malang, Indonesia, untuk meningkatkan gizi anak dan kesehatan keluarga. Stunting, suatu bentuk kekurangan gizi kronis, memiliki konsekuensi jangka panjang pada pertumbuhan anak, perkembangan kognitif, dan kesehatan secara keseluruhan. Kami memanfaatkan informasi dari laporan NFHS 2019-2021 tentang Survei Kesehatan Keluarga Nasional. Penanganan stunting di Malang membutuhkan pendekatan komprehensif yang tidak hanya mempertimbangkan aspek medis dan gizi tetapi juga faktor-faktor seperti pendidikan, sanitasi, kelestarian lingkungan, dan kapasitas kelembagaan. Dengan mengintegrasikan beragam elemen ini ke dalam intervensi dan kebijakan, Malang dapat bekerja untuk mengurangi prevalensi stunting dan meningkatkan kesehatan dan kesejahteraan penduduknya.

**Kata Kunci:** pendidikan kesehatan keluarga; peningkatan gizi anak; pencegahan stunting

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## INTRODUCTION

Stunting prevention strategies are crucial in addressing children's long-term health and development. Research indicates that integrated interventions that improve maternal, infant, and young child nutrition can significantly impact growth and behavioral development (Dewey, 2016). Factors at both individual and community levels play a significant role in childhood stunting (Haile et al., 2016). Maternal education on complementary feeding and providing complementary foods have positively affected child growth, including weight gain and linear growth. Studies have highlighted the importance of addressing stunting early in life, as the severity and timing of stunting in the first two years can affect cognitive development in later childhood (Ridwan et al., 2024; Ziharani et al., 2024). Nutrition training for health workers has improved caregivers' feeding practices for children aged six months to two years, emphasizing behaviors like food preparation hygiene and dietary diversity (Priyadi et al., 2024). A community-centered approach that includes education, empowerment, and support for caregivers and targeted nutrition interventions and policies is essential for sustainable stunting prevention. Significant strides can be made in improving child nutrition and family health by addressing stunting early, promoting proper feeding practices, and empowering communities.

Empowering communities for sustainable stunting prevention involves integrating various factors to enhance child nutrition and family health education. Studies have highlighted the importance of community involvement and empowerment in addressing stunting. Community-based interventions, such as health promotion programs and community empowerment initiatives, are crucial in increasing awareness, knowledge, and skills related to stunting prevention (Erlyn et al., 2021). These programs aim to engage community members, particularly mothers, in taking proactive steps to prevent stunting by improving their understanding of the factors contributing to stunting and the importance of early intervention. Furthermore, research emphasizes the significance of women's empowerment in preventing stunting among children. Women's empowerment can take various forms, including providing education on nutrition to mothers and children and involving women in decision-making processes related to health and nutrition (Margatot & Huriyah, 2021).

Moreover, the effectiveness of community-based interventions in reducing stunting has been demonstrated in various settings. Strategies such as improving communication and coordination and establishing performance indicators at the district level have been recommended to accelerate stunting reduction efforts. Additionally, involving various stakeholders, including national and community actors, mothers, and village-level authorities, is crucial in reducing stunting by addressing poverty, education, early marriage prevention, food access, and sanitation (Siswati et al., 2022). A comprehensive approach to empowering communities for sustainable stunting prevention involves community engagement, women's empowerment, volunteer involvement, and multi-stakeholder collaboration. By enhancing community knowledge, skills, and participation, sustainable efforts can be made to prevent stunting and improve child nutrition and family health education.

Research on stunting prevention aims to identify and validate effective strategies to mitigate the incidence of stunting in children, which has profound implications for their health and development. The primary objectives of such research include assessing the impact of comprehensive nutritional interventions that target pregnant women, infants, and young children. These studies typically focus on the efficacy of various interventions, such as providing micronutrient supplements, improved access to quality foods, and enhanced maternal nutrition education. The crucial objective of stunting prevention research is to evaluate the role of community engagement and empowerment in sustaining these health outcomes (Bhutta et al., 2020). Stunting studies analyze how effectively community-driven initiatives can raise awareness, change behaviors, and implement preventive measures against stunting (Tasic et al., 2020). This research aims

to find out how to empower the community for sustainable stunting prevention to enhance child nutrition and family health education.

## LITERATURE REVIEW

### Communities Education

Communities play a crucial role in education, influencing various aspects of learning and development. The literature on community education highlights the significance of community engagement in shaping educational practices and outcomes. Studies emphasize the impact of socially accountable health professional education on students, local health workforces, and communities (Reeve et al., 2016). This underscores the importance of aligning educational inputs with community needs to maximize positive outcomes. Additionally, community-based education programs have positively impacted students, particularly preparing them for rural practice (Muluk & Nashihah., 2021). Furthermore, the literature emphasizes the role of community engagement professionals in higher education, outlining competencies and personal attributes necessary for effective community engagement (Menon & Suresh, 2020). This highlights the importance of specialized skills and knowledge in fostering meaningful collaborations between educational institutions and communities. Community-based pedagogy in nursing education has been shown to strengthen community-academic partnerships and promote sustainable development (Markaki et al., 2021). This underscores the value of integrating community perspectives and participation in educational initiatives.

In community development education, efforts are being made to enhance community well-being through cross-disciplinary and inclusive curricula (Stanard et al., 2021). This approach seeks to encourage critical thinking and theoretical engagement with community development issues, fostering a more connected field of education. Additionally, community-based education models for health professional training institutions have been proposed to optimize learning experiences outside traditional academic settings. Such models emphasize the importance of practical, hands-on learning in real-world community contexts. Overall, the literature underscores the transformative potential of community education initiatives in shaping educational practices, promoting public health, and fostering community development. By integrating community perspectives, values, and expertise into educational frameworks, institutions can create more meaningful and impactful learning experiences for students while addressing the diverse needs of communities.

### Family Education

Family education is fundamental in shaping children's academic success and overall well-being. Research has consistently demonstrated that parental involvement in education significantly enhances students' academic achievements (Jeynes, 2007). This involvement encompasses initiatives to boost parental engagement in their children's education, underscoring the critical role of family participation in educational outcomes (Marschall & Shah, 2020). Family education is the cornerstone of the education system, playing a pivotal role in social and school education (Huang et al., 2022). Studies have explored the impact of family dynamics, such as parental divorce, on children's educational attainment. Research indicates that parental divorce can have enduring effects on children's academic outcomes, highlighting the importance of understanding how parental education levels can moderate these consequences (Bernardi & Radl, 2014). Furthermore, parental resources, particularly parental education, influence children's academic success across various countries (Tanskanen et al., 2016).

Nurses' attitudes toward family involvement in patient care have been investigated, emphasizing the significance of educating healthcare professionals on the value of family participation in patient well-being (Luttik et al., 2016). Educational programs for nurses should stress the importance of family involvement and provide training on effectively engaging with families to enhance patient care outcomes. Similarly, collaboration with families is essential in early childhood education to effectively support children's development (Murphy et al., 2021). Educators play a crucial role in establishing strong relationships with families, positively influencing children's learning experiences (O'Connor et al., 2018). Moreover, family education extends beyond academic settings to areas such as entrepreneurship education, where the role of family support in fostering entrepreneurial skills has been highlighted. Culturally relevant pedagogy can enhance family engagement in online learning environments, emphasizing effective communication and resource-sharing between educators and families (Bolander, 2023). In conclusion, family education is a multifaceted concept that impacts various aspects of individuals' lives, from academic achievement to healthcare outcomes and entrepreneurship. Understanding the dynamics of family involvement in education and healthcare is crucial for developing effective strategies to support families and promote positive outcomes for children and patients.

## **Family Health Education**

Family health education is essential for promoting well-being and preventing various health issues within families. The literature provides insights into different aspects of family health education, ranging from global health competencies in medical education to specific programs targeting caregivers of individuals with dementia, overweight and obesity prevention in children, and caring for children with congenital adrenal hyperplasia. Family health education is essential for promoting well-being and preventing various health issues within families. The literature provides insights into different aspects of family health education, ranging from global health competencies in medical education to specific programs targeting caregivers of individuals with dementia, overweight and obesity prevention in children, and caring for children with congenital adrenal hyperplasia. It is crucial to incorporate global health competencies into medical education to address current healthcare challenges effectively (Battat et al., 2010; Tun, 2019). This underscores the need for medical professionals to understand global health trends and practices comprehensively. Similarly, another research highlights the significance of Health applications in providing educational support to family caregivers of individuals with dementia, showcasing how technology can enhance health education delivery (Faieta et al., 2022; Rathnayake et al., 2018).

Furthermore, it stresses the role of health education in empowering families to prevent and control overweight and obesity in children (Mado et al., 2021). Their systematic review underscores the effectiveness of various educational strategies, such as training activities and teaching practices, in improving families' abilities to address these health concerns. Focus on family education strategies for caring for children with congenital adrenal hyperplasia, emphasizing the importance of tailored health education to meet specific familial needs in managing such conditions (Erawati & Lestari, 2020). The essential role of education in family planning, particularly in developing countries, indicates that educational interventions are crucial in promoting family health and well-being (Senderowicz, 2020). The significance of parent engagement in programs like PEACH™ to address childhood obesity, showcasing the positive impact of educational interventions involving parents. In conclusion, the literature review on family health education underscores the diverse strategies and approaches employed to educate and support families in managing various health conditions and promoting overall well-being (Williams et al., 2017). From global health competencies in medical education to specific programs targeting caregivers and families, the literature emphasizes the pivotal role of education in enhancing health outcomes within family settings.

## METHODS

The information used in this study comes from the NFHS (2019-2021) state report and NFHS (2019-2021) statistics that are available to the general public. This data covers details on underweight, stunted, and wasted kids under five years old at the district level. Malang City's population, health, and nutrition are all covered by the NFHS. 5,21. Stunting is evaluated using the height-for-age metric of linear growth retardation and cumulative growth deficits. The three indicators are underweight and wasting, each as follows: A child is considered short for their age if their height-for-age Z-score is less than minus two SD from the reference group's median (stunted). Wasting: The weight-for-height index measures a person's current nutritional status by comparing their body mass to their height or length. A child is deemed thin (wasted) or severely undernourished if their Z-score is less than minus two standard deviations (SD) from the reference population's median. A composite measure called height-for-age combines weight-for-height and height-for-age. Weight for age is used to determine underweight. It takes recent and current malnutrition into account. Children who are overweight have a weight-for-age Z-score that is less than minus two standard deviations (SD) from the median of the reference population.

The Moran's I statistic is the foundation for local Moran's I, which measures local spatial autocorrelation. Anselin created the local indicator of spatial association (LISA) statistic. LISA statistics have two features: An overall indication of spatial connectivity is proportional to all observations' total LISAs. LISA demonstrates the degree of significant geographic clustering of comparable values around each observation.

$$I_i = \frac{\sum_{k=1}^n (x_i - \bar{x})(x_k - \bar{x})}{\sum_{k=1}^n (x_k - \bar{x})^2} \frac{\sum_{j=1}^n \omega_{ij} (x_j - \bar{x})}{(n-1)}$$

Where n is the total number of spatial units for which i and j have been used as indexes,  $x_i$  is the relevant variable,  $\bar{x}$  is its mean, and  $\omega_{ij}$  is a component of a spatial weights matrix.

## RESULTS AND DISCUSSION

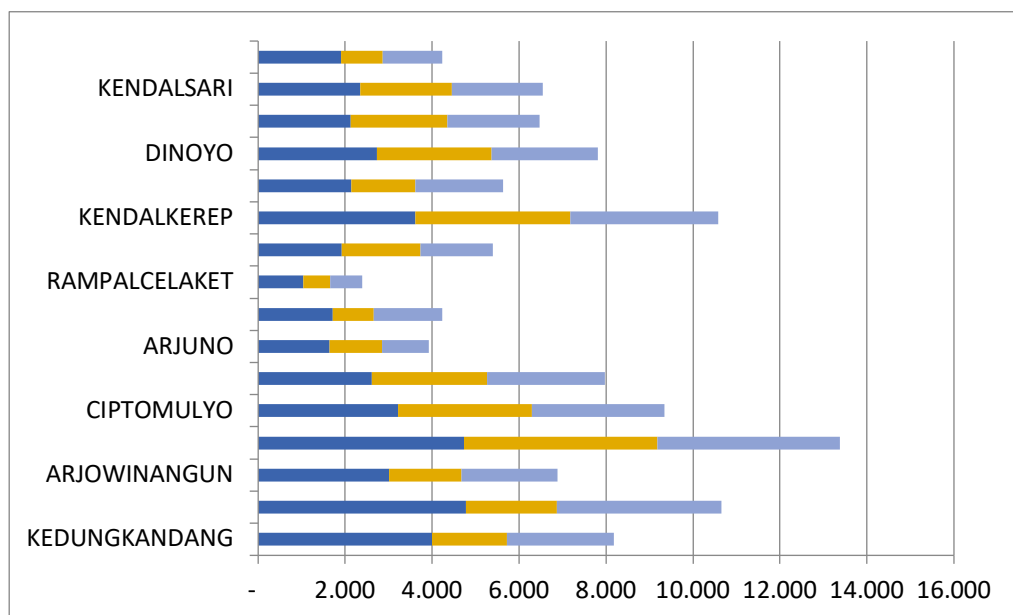
### Result

Education has a significant impact on stunting cases in children. Studies show that maternal education levels correlate with child stunting rates. Analysis of data from Indonesia and Bangladesh found a link between stunting and lower levels of maternal education. In addition, factors such as parental education level, including maternal education level, are significant predictors of child stunting. Research also shows that maternal education is a risk factor for stunting in children (Yefri et al., 2022). Education also plays a role in stunting prevention through women's empowerment. Effective women's empowerment programs can help prevent stunting in children (Margatot & Huriah, 2021). In addition, factors such as education level, health attitudes, socioeconomic rank, empowerment, and child weight are significant predictors of stunting in rural and urban areas (Farooq et al., 2019).

In addition to education, other factors such as environmental conditions, socioeconomic status, and diet also play a role in stunting cases. Poor sanitation, inadequate food intake, and food insecurity are known correlations with stunting and underweight in adolescents (Azupogo et al., 2020). In addition, factors such as household socioeconomic status, occupancy density, maternal age, maternal education, and maternal nutritional status are also associated with stunting in children (Slemming et al., 2017). Thus, education is important in preventing stunting in children through increasing parents' knowledge and understanding of proper nutrition and empowering women. In addition, stunting prevention efforts must also pay attention

to environmental, socioeconomic, and healthy diet factors to achieve optimal results in overcoming stunting problems in children.

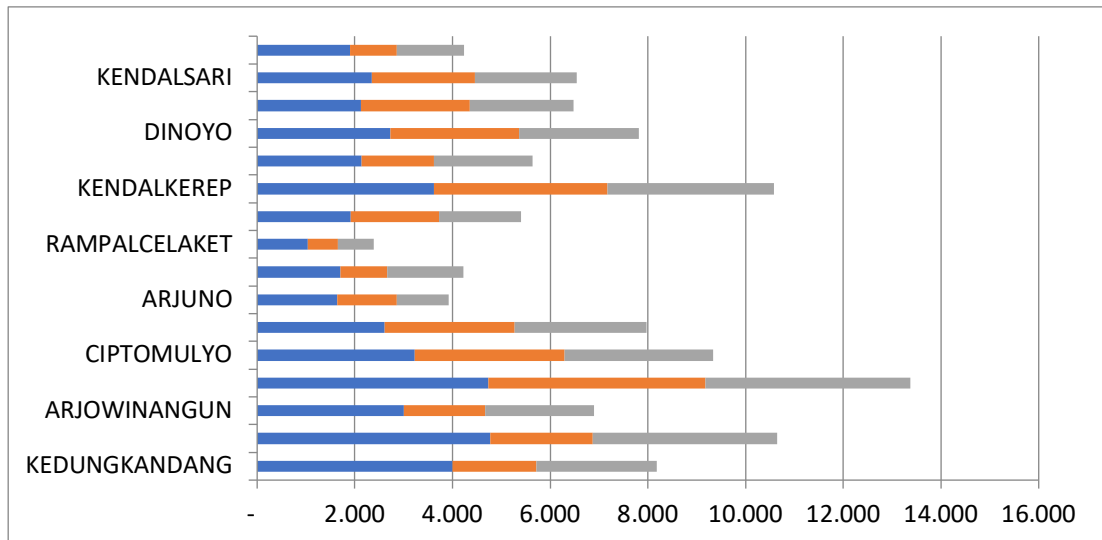
According to the results that have been gathered, the measurement results fall within the range (Z-Score) of -2 SD to -3 SD (short/stunted) and -3 SD (very short / severely stunted), where stunting is a nutritional status based on the PB / U or TB / U index where in the anthropometric standards for evaluating the nutritional status of children. Chronic undernutrition from incorrect feeding that does not satisfy nutritional needs causes stunting, a chronic malnutrition problem. Because they increase the risk of suffering, death, and the limitation of growth in both the motor and mental spheres, stunting issues are a public health concern. The first signs of stunting may appear when the fetus is still in the womb and are not apparent until the child is two years old. Inadequate, halting, and catastrophic growth, which reflects the failure to achieve optimal growth, results in stunting. Between 2019 and 2021, stunting, wasting, and being underweight were distributed in Malang as **Figure 1** below.



**Figure 1.** LB3 Nutrition Report in Malang City 2019-2021

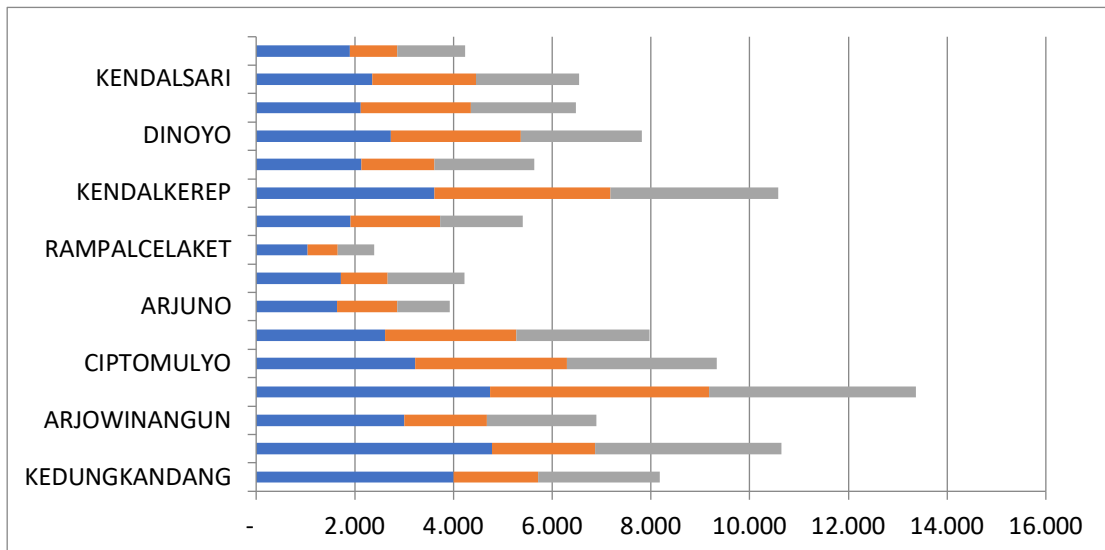
Source: Dinas Kesehatan Malang Kota (<https://dinkes.malangkota.go.id/wp-content/uploads/sites/104/2023/05/Profilkes-2021.pdf>)

A toddler's age, weight (BB), and height can be used to determine how well-nourished they are (TB). Toddlers' nutritional health can be tracked using three anthropometric markers: weight according to age (BB/U), height according to age (TB/U), and weight according to height (BB/TB). Malnutrition is a widespread problem around the world, particularly in Indonesia. Inadequate nutrition from the period of conception until delivery causes several health problems in both mothers and babies. One of the health problems that impact babies is stunting or short stature brought on by persistent malnutrition. In 2020, there were expected to be 58,862 toddlers in Malang City; of them, 33,216 toddlers, or 56.43% of the total, had malnutrition status, which amounted to 2,984. The weight by age index (BB/U), which combines the phrases malnutrition and malnutrition with a Z score of -2 standard deviation, is used to determine the nutritional status of toddlers and describe malnutrition.



**Figure 2.** LB3 Nutrition Report in Malang City 2019-2021  
Source: Dinas Kesehatan Malang Kota (<https://dinkes.malangkota.go.id/wp-content/uploads/sites/104/2023/05/Profilkes-2021.pdf>)

Of the 39,243 toddlers whose height was measured, 5,701 were classified as short or very short. The height by age index (TB/U), which combines concise and short terms with a Z score of -2 standard deviation, determines a toddler's nutritional condition.



**Figure 3.** LB3 Nutrition Report in Malang City 2019-2021  
Source: Dinas Kesehatan Malang Kota (<https://dinkes.malangkota.go.id/wp-content/uploads/sites/104/2023/05/Profilkes-2021.pdf>)

On the other hand, out of the 33,216 children who were tested, 1,767 were thin. The weighted index according to height (BB/TB), a mix of thin and thin terms with a Z score of -2 standard deviation, determines a toddler's nutritional condition. As stated in the Regulation of the Minister of Health of the Republic of Indonesia Number 29 of 2019 concerning Overcoming Nutritional Problems for Children Due to Disease, the prevention of diseases that are most likely to cause stunting and necessitate special measures to save lives, including the risk of growth failure, malnutrition or malnutrition, very premature babies, babies with very low birth weights, and cow's milk are given priority. Numerous efforts are performed, including nutritional surveillance, case finding, and case management.

Data collecting on the growth and development of toddlers is done in conjunction with monitoring nutritional status, processing and analyzing data, and distributing information (**Figures 1, 2, 3**). Meanwhile, cases are actively and passively discovered and handled. Health center staff members follow up on cases in the neighborhood to identify any active activities. Passive discovery is gained by looking at patients who have been sent to you and their progression from “*posyandu*” to “*puskesmas*” for confirmation or by looking at patients who are dating medical institutions. To prevent stunting in children, it is important to meet their nutritional needs from conception onward. Babies should only be breastfed for the first six months and then given complementary foods. The child's growth and development should also be closely watched, and the environment should always be kept clean.

## Discussion

Education has a significant impact in reducing stunting cases in the city of Malang. Research shows that education related to complementary feeding for children under two years significantly increases children's height (HAZ) and reduces stunting rates (Paramashanti & Benita, 2020; Walters et al., 2019). In addition, the mother's education level also plays an important role in reducing stunting, where the attention given to the child, good care practices, and health service utilization are influenced by the mother's education level (Saleh et al., 2021; Yunitasari et al., 2021). In addition, a study shows that education for mothers in stunting prevention can be done through the Bina Keluarga Balita program, which is part of the Family Planning Village program initiated by the government (Dolifah et al., 2021). This shows that education for mothers positively impacts the prevention of stunting in children. In addition, the study highlights the importance of economic factors in improving child nutrition. Strong economic reasons exist to improve child nutrition, which can help reduce stunting cases (Aguilera-Vasquez & Daher, 2019). Thus, education and economic factors have an essential role in reducing stunting cases in the city of Malang.

In Malang, Indonesia, addressing sustainable stunting prevention requires a comprehensive approach integrating various determinants and interventions to enhance child nutrition and family health. Stunting, a form of chronic malnutrition, has been a persistent issue in Malang, with the prevalence showing an increasing trend over the years. Factors such as low intake of essential amino acids, inadequate family income, lack of breastfeeding, and limited dietary diversity have been identified as significant risk factors contributing to stunting among children in Malang (Maulidiana & Sutjiati, 2021). Engaging family members in maternal, infant, and young child nutrition activities is essential to combat stunting in Malang. Research suggests that interventions involving family members can lead to more sustainable impacts on maternal and child nutrition practices by addressing gender norms, women's empowerment, and family communication dynamics. Moreover, mothers' awareness of the susceptibility and severity of stunting plays a crucial role in prevention efforts (Muche & Dewau, 2021).

A successful stunting prevention program in Malang would require a multi-faceted approach that includes nutrition education, empowerment of women, and community involvement. Significant progress can be made in reducing stunting rates by implementing specific nutrition interventions and nutrition-sensitive programs in an integrated manner, similar to the strategies adopted in other regions of Indonesia. Additionally, promoting healthy lifestyle practices among adolescents and enhancing environmental sustainability in Malang can contribute to long-term stunting prevention efforts (Maulana et al., 2023). Sustainable stunting prevention in Malang requires a holistic and collaborative approach that involves various stakeholders, including families, communities, local governments, and healthcare providers. By addressing the underlying determinants of stunting, promoting nutrition education, and fostering community engagement, Malang can make significant strides toward improving child nutrition and family health, ultimately leading to a healthier future for its population.



## CONCLUSION

The studies also highlight the importance of integrated interventions, including psychosocial approaches, cognitive stimulation, and care responsive to mother and child. In addition, health training for health workers and mentoring in healthy feeding practices effectively improve children's nutritional status. The importance of the role of the community is also emphasized in efforts to prevent stunting. Community-based nutrition education, support from trained health volunteers, and active involvement from various parties in strengthening institutional capacity are key factors in accelerating the reduction of stunting rates. Thus, collaborative efforts involving various stakeholders, including the government, health workers, families, and the community, are needed to improve child nutrition and overall family health in Malang City. A holistic and sustainable approach to stunting prevention will significantly impact the welfare of children and families in Malang City. Thus, education has a significant role in reducing stunting cases in Malang City. Education to parents, especially mothers, about good feeding practices, proper sanitation, and a healthy environment can help reduce the incidence of stunting in children in the region.

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