The Effectiveness of Stunting Prevention Education through the Community Service Program on Increasing the Knowledge of Residents in Jatisawit Hamlet: A Pre-test and Post-test Approach

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Abstract

Stunting is a chronic nutritional problem that has a serious impact on a child's physical growth, cognitive development, and long-term productivity. Efforts to prevent stunting must be carried out through community-based health education. This study aims to analyze the effectiveness of stunting prevention education through a Student Community Service (KKN) program in Padukuhan Jatisawit. The method used was a pretest and posttest with a questionnaire instrument, as well as an N-Gain analysis to measure the increase in participants' knowledge. The results showed an increase in knowledge scores from an average pretest of 8.5 to 9.9 on the posttest, with an N-Gain value of 0.93 which is in the high category and a program effectiveness of 93.33%. These findings confirm that interactive lecture methods, discussions, and simple educational media such as leaflets are able to significantly increase community knowledge. Although the increase in knowledge is considered very effective, the program's sustainability needs to be directed towards shaping the attitudes and behavior of the community so that educational interventions have a long-term impact on stunting prevention efforts.

Keywords : Health Education, Community Empowerment, Pretest-Posttest, Stunting.

1. Introduction

Stunting remains a very serious public health problem in Indonesia because it has a long-term impact on child growth and development. This condition is not only related to physical limitations in the form of height that is lower than the standard for their age, but also has a major impact on cognitive development, learning abilities, competitiveness, and quality of life in adulthood. According to a 2021 report by the World Health Organization (WHO), the prevalence of stunting in Indonesia reached 27.67%. This figure places Indonesia as one of the countries with the highest burden of stunting in the Southeast Asian region. This high prevalence indicates that stunting is not merely an individual health issue, but also a challenge for national development as it impacts the productivity of human resources in the future. Therefore, efforts to prevent stunting through early intervention, especially during the first 1,000 days of life (1000 HPK), are crucial and must be a top priority for the government, health workers, and the community to achieve a healthy, intelligent, and productive generation.

Stunting has been a concern for the Indonesian government since 2013. At that time, the prevalence of stunting among toddlers in Indonesia reached 37.2%. Therefore, Presidential Regulation (Perpres) No. 42 of 2013 concerning the Acceleration of Nutrition Improvement was drafted, regulating the importance of accelerating nutrition improvement, especially during the first 1000 days of life (HPK).

Reducing stunting was also included as one of the priorities in the 2014-2019 National Medium-Term Development Plan (RPJMN). Based on the results of the 2023 Indonesian Health Survey (SKI), the prevalence of stunting in Indonesia in 2023 is 21.5%. This means that currently, 1 in 5 Indonesian children under five years of age suffer from long-term malnutrition, which has the potential to interfere with their physical growth, cognitive and motor development, and will affect their health and productivity as adults.

Stunting is a condition in which a child's growth and development are stunted due to chronic malnutrition from the womb to early life, exacerbated by repeated infections and a lack of psychosocial stimulation from the environment. In Indonesia, the problem of stunting does not stand alone, but is influenced by various complex factors, including low levels of maternal education, limited socio-economic conditions of families, poor environmental sanitation, and limited access to basic health services (Nugroho et al., 2023). The long-term effects of stunting are very serious, ranging from reduced cognitive abilities and learning achievement in children, increased risk of obesity and non-communicable diseases in adulthood, to reduced work productivity in later life (Akbar et al., 2023). Thus, stunting is not merely a problem of malnutrition, but a multidimensional issue with broad implications for the quality of life of individuals and the future development of Indonesia's human resources.

Health education efforts have proven to play an important role in increasing public understanding of stunting prevention. Various forms of educational interventions, such as counseling for mothers, assistance from posyandu cadres, and education on balanced nutrition, have shown positive results in the form of increased knowledge and behavioral changes in families in terms of regulating diet and maintaining environmental hygiene (Kusumawardani et al., 2020). These findings are in line with behavioral change theory, particularly the Health Belief Model (HBM), which explains that individuals will be more motivated to adopt healthy behaviors if they recognize their vulnerability to a disease, understand the severity of the risk, and assess the benefits as greater than the obstacles they may face. By applying this theoretical approach, the effectiveness of health promotion programs can be improved, especially in rural areas that still have a high prevalence of stunting. This shows that education not only serves as a means of conveying information but also as a strategy for empowering the community in building awareness and commitment to prevent stunting in a sustainable manner.

The Real Work Lecture (KKN) program has a strategic role in community empowerment efforts, particularly in the aspects of health education and nutrition promotion. Through educational activities carried out at the village level, students can act as agents of change by providing relevant and applicable knowledge. One example is stunting prevention education carried out at integrated health service posts (posyandu). The results of Laely et al.'s (2023) research show that these activities not only increase mothers' understanding of the signs and preventive measures for stunting but also raise awareness of the importance of applying a balanced diet in daily life. These findings confirm that student involvement in KKN activities can have a positive impact on increasing knowledge and changing community health behaviors, so that this program can be seen as a form of tangible contribution by universities in supporting health development at the community level.

Several field studies in Indonesia indicate that community-based nutrition education has a tangible contribution to reducing stunting rates. For example, the results of a study by Nurhanifah et al. (2024) reveal that health education programs combined with the practice of balanced nutrition can reduce the prevalence of stunting in children in rural areas. This confirms that interventions that are not only theoretical but also involve direct practice in daily life are more effective in changing family nutritional behavior.

According to Dimiati (2019), there is a correlation between stunting and children's academic achievement, which ultimately shows that stunting not only affects physical growth but also has implications for cognitive development and long-term academic ability. Thus, stunting prevention education efforts are not only relevant for improving children's health today but are also important as an investment in the quality of human resources in the future.

Stunting prevention efforts are greatly influenced by parents' level of knowledge about the condition. Knowledge is acquired through the process of information recognition by the human senses, such as sight, hearing, taste, touch, and smell. Improving the understanding of mothers with toddlers regarding stunting is also influenced by factors such as education, behavior, and beliefs (Haines et al., 2018).

Previous studies have revealed that low levels of maternal knowledge are one of the factors contributing to the risk of stunting. Children with stunting are generally more often found among mothers with inadequate knowledge (Titimeidara & Hadikurniawati, 2021). In addition, there is a significant relationship between energy intake, history of prolonged illness, birth weight, maternal education level, occupation, number of family members, and family income with the incidence of stunting, with maternal education showing the strongest correlation (Hall et al., 2018).

Other studies confirm that low maternal knowledge about stunting can be influenced by age and education level. Therefore, providing adequate information about stunting to expectant mothers, mothers with toddlers, and health workers is essential. This step is important so that the characteristics of stunting can be well understood, children's intelligence can be optimized, and cases of stunting can be prevented early on (Saleh et al., 2021).

2. Method

2.1. Time and Place

The stunting education activity was held on August 22, 2025, in Padukuhan Jatisawit, Kelurahan Balecatur, Kapanewon Gamping, Sleman Regency. The activity took the form of health education for families through a community service program (KKN) focused on stunting prevention. This activity aimed to increase community knowledge about stunting prevention efforts so that they could be applied in daily life as part of healthy living behaviors.

2.2. Targets and Participants/Respondents

The main target of the activity is families as the smallest unit of society, because families play an important role in shaping healthy behaviors and lifestyles. The secondary target of the activity is local health cadres who are expected to act as extensions in continuously disseminating health information to the community. The scope of this activity focuses on promotional and preventive efforts through counseling and health education on stunting prevention, with the hope of increasing public knowledge, awareness, and concern about the importance of nutrition and proper child care.

2.3. Scope or Form of Activities

Health education is conducted using an interactive lecture approach combined with a question and answer session. The media used are presentations via LCD projectors and the distribution of leaflets to participants. To assess the community's level of understanding of the educational material provided, pre-test questionnaires are distributed before the activity begins and post-tests after the activity ends. The pre-test and post-test results are used as indicators to measure the effectiveness of the education provided.

2.4. Procedures or Stages of Activities

The stages of the stunting prevention education activity in the KKN program in Jatisawit Hamlet were carried out systematically so that the objectives of the activity could be achieved properly. The stages of the activity included:

2.4.1. Preparation

The KKN team coordinated with village officials and local health cadres to determine the targets, schedule, and location of the activity. In addition, educational media in the form of booklets, flipcharts, and SAP (Satuan Acara Penyuluhan or Extension Program) were prepared for use during the extension program. Evaluation instruments in the form of pre-test and post-test questionnaires were also prepared to measure the participants' level of knowledge.

2.4.2. Pre-test Implementation

Before the material was delivered, all participants were given a pre-test with a questionnaire containing questions related to the definition, risk factors, characteristics, and prevention of stunting. The pre-test aimed to determine the initial level of knowledge of the participants before the educational intervention.

2.4.3. Education

Education was conducted through lectures, discussions, and interactive question and answer sessions. The material covered the importance of the first 1000 days of life, parenting, balanced nutrition, environmental hygiene, and stunting prevention efforts. During the education session, participants showed enthusiasm by actively asking questions and participating in discussions.

2.4.4. Post-test Implementation

After the education was completed, participants were asked to fill out the post-test again using the same questionnaire. The post-test results were used to assess the increase in knowledge after receiving the educational intervention.

2.4.5. Data Analysis

The pre-test and post-test results were compared using N-Gain calculations and Program Effectiveness (EP). This analysis aimed to determine the effectiveness of stunting prevention education in increasing participants' knowledge.

2.5. Evaluation Methods (e.g., pre-test, post-test, N-Gain, EP).

2.5.1. Pre-test

The pre-test was conducted before the counseling began with the aim of determining the participants' initial level of knowledge about stunting. The instrument used was a questionnaire containing a number of questions related to the definition, risk factors, signs, impacts, and prevention efforts for stunting. The pre-test results were used as a basis for assessing the participants' initial understanding before receiving the educational intervention.

2.5.2. Post-test

The post-test was administered after the educational activity was completed using the same questionnaire as the pre-test. The purpose of the post-test was to measure the increase in participants' knowledge after receiving the educational material. The post-test results were then compared with the pre-test as an indicator of the success of the activity, which was further analyzed using N-Gain and Effectiveness Program (EP) calculations.

2.5.3. N-Gain

"N-Gain," short for "normalized gain," creates a very useful framework in educational research. The N-Gain test is a commonly used method to measure the effectiveness of learning or intervention in improving student learning outcomes. This method provides a strong basis for evaluating the extent to which a learning program has contributed to student understanding.

The N-Gain approach measures the relative change between students' levels of understanding before and after learning. By making this comparison, N-Gain analysis provides teachers with deep insights into the effectiveness of a particular curriculum or teaching method. The results can quantitatively describe the extent to which students have mastered the subject matter being taught.

More than just providing numbers, this approach allows for the observation of learning outcomes with a group center orientation. This means that N-Gain analysis not only looks at individual development, but also provides an overview of the effectiveness of learning as a whole. Thus, the N-Gain method is not only an evaluation tool, but also a valuable guide for educators in optimizing their learning methods, creating a more effective learning environment, and improving the overall quality of education.

N-Gain scores range from -1 to 1. Positive values indicate an increase in student learning outcomes after learning, while negative values indicate a decrease in student learning outcomes. Equation (1) can be used to calculate the N-Gain score.

Improvements in student learning outcomes can be interpreted using Normalized Gain (N-Gain). Improvements in student learning outcomes in the learning process are not easy to express. Using absolute gain (the difference between the initial and final test scores) does not adequately explain which gains are classified as high and which are classified as low. According to Hake, R. R. (2002), normalized gain (N-Gain) is formulated in the equation below :

Table 1. Normalized Gain Criteria

Skor N-*Gain*	Kriteria Normalized *Gain*
0,00 < N - *Gain* < 0,30	Rendah
0,30 ≤ N - *Gain* ≤ 0,70	Sedang
N - *Gain* > 0,70	Tinggi

Table 2. Criteria for determining the level of effectiveness

Presentase (%)	Interpretasi
< 40	Tidak Efektif
40 - 55	Kurang Efektif
56 - 75	Cukup Efektif
> 76	Efektif

2.5.4. EP Calculation or Extension Effectiveness

The data were analyzed using the Ginting formula to measure extension effectiveness (EP) and the effectiveness of behavioral change in terms of knowledge, attitude/interest, and skills of farmers. The data obtained were analyzed using the Ginting formula (1991), namely:

Effectiveness of Extension Media According to Ginting (1991) Where: PS = total posttest score, PR = total pretest score, N = number of respondents, I = highest weight value, Q = number of questions, 100% = desired knowledge.

Table 3. Criteria for Testing the Percentage Effectiveness of Extension (EP)

Presentase	Interpretasi
64,00 - 100 %	Efektif / Tinggi
32,00 - 64,00 %	Cukup Efektif / Sedang
0,00 - 32,00 %	Kurang Efektif / Redah

3. Results and discussion

Stunting is a condition of malnutrition measured based on height-for-age (HAZ) and is commonly experienced by children under five, especially in developing countries. The main factors that play a major role in stunting are infections and nutritional problems. This condition reflects chronic malnutrition due to long-term nutritional deficiencies and is associated with pathological changes (Dewey KG, 2012). Stunting is one of the indicators of public health problems because it is associated with an increased risk of illness and can hinder children's cognitive development and learning abilities (Unicef, 2013). Long-term deficiency in macro and micro nutrients is the main cause, compounded by environmental factors, socioeconomic conditions, and intrauterine growth restriction (IUGR) (Monteiro C.A et al, 2010; Putri & Sukmana, 2022).

The effectiveness of the stunting prevention education program through the Real Work Lecture (KKN) activity is a structured process that aims to assess the extent to which educational interventions can increase public knowledge about stunting. The evaluation process is carried out through the collection and analysis of data related to program implementation, accompanied by the active participation of Jatisawit Hamlet residents in providing input on the activities carried out. This evaluation plays an important role in identifying the level of achievement of community information needs, increasing awareness of the dangers of stunting, and forming healthy behaviors at the family level. From the perspective of community-based health development, evaluation not only serves as an instrument for measuring achievements but also as a means to strengthen community involvement in supporting continuous stunting prevention efforts. Thus, program evaluation can foster a sense of concern, responsibility, and collective ownership among the community towards stunting prevention efforts, which directly impacts the improvement of the quality of life for future generations.

The function of evaluation in the KKN program has a strategic role in ensuring the effectiveness and sustainability of stunting prevention education. Evaluation is used to assess the achievement of program objectives, as well as identify positive impacts in the form of increased knowledge, attitudes, and community awareness. Through this mechanism, stakeholders can monitor program progress, assess the suitability of implementation with the initial plan, and detect obstacles that arise during implementation. In addition, evaluation also increases the participation of Jatisawit Hamlet residents by

providing them with a space to convey their input and play a role in the decision-making process related to stunting prevention strategies in their environment.

Figure 1. Socialization

The pre-test and post-test methods were applied as an objective approach to measuring changes in community knowledge. The stages began with a pre-test before the educational activities to obtain baseline data on the community's level of knowledge regarding the definition, causes, long-term effects, and prevention efforts for stunting. This initial data served as a reference for comparison after the intervention was carried out. Next, a post-test was conducted using a similar instrument to assess changes in community knowledge after participating in the education program. The post-test results provided an empirical picture of the program's effectiveness, particularly in measuring significant improvements compared to the initial conditions, while also evaluating residents' attitudes after receiving education.

A comparison of pre-test and post-test results allows researchers to assess the extent to which the KKN program has succeeded in achieving its objectives, namely increasing the knowledge and awareness of the Jatisawit community in preventing stunting. Through this evaluation process, aspects of success, weaknesses, and relevant recommendations for the development of future education strategies can be identified. Thus, stunting prevention programs can be implemented more effectively, sustainably, and in line with the real needs of the community.

Efforts to prevent stunting can be carried out through various interrelated strategies. Monitoring children's growth is a very important first step, carried out through regular measurements of weight, height, and head circumference, for example at the Posyandu. This monitoring allows for early detection of growth disorders. Furthermore, nutritional fulfillment and healthy eating patterns play a fundamental role, which is realized through the provision of exclusive breastfeeding and complementary foods that are rich in macro and micro nutrients, including carbohydrates, proteins, fats, vitamins, and minerals. In addition to nutritional factors, environmental hygiene and health also play an important role, as access to clean water, the use of sanitary toilets, and the habit of washing hands with soap can prevent infections that are indirect causes of stunting.

Figure 2. Example of educational media for socialization

Figure 3. Socialization materials

In addition, complete immunization is a preventive measure to protect children from infectious diseases that can worsen their nutritional status. Equally important is consistent stimulation of child growth and development to support cognitive and motor development in accordance with their age. Furthermore, attention to the health of pregnant and breastfeeding mothers is also crucial, as optimal nutritional intake during pregnancy ensures healthy fetal growth and reduces the risk of stunting. For breastfeeding mothers, consumption of a balanced diet is essential to maintain the quality of breast milk so that babies get the best nutrition. Finally, family support and education play a major role in the success of stunting prevention, especially in terms of nutrition and child care. Thus, stunting prevention requires a holistic approach that covers nutrition, health, environment, developmental stimulation, and social support from families and communities.

Table 4. Respondents' Knowledge Level

Score	Pre-test	Post-test
Good	3 participants	12 participants
Fair	13 participants	8 participants
Poor	5 participants	1 participant

Table 5. Results of Stunting Counseling Evaluation

Aspect Score	Number of Pre-tests	Number of Post-tests	Pre-test Average	Post-test Average	N-Gain	Effectiveness
Knowledge	85	99	8.5	9.9	0.933333333	93.33

An evaluation of the effectiveness of the stunting prevention education program through Community Service Learning (KKN) activities in Padukuhan Jatisawit using a pretest and posttest approach showed a significant increase in community knowledge. Initial measurements through the pretest obtained a total score of 85 with an average of 8.5, indicating that participants' understanding of stunting issues was still relatively low before the intervention. After the implementation of the program using interactive lectures, group discussions, and leaflet distribution, the posttest score increased to 99 with an average of 9.9. These findings confirm that the educational intervention was effective in increasing community understanding of the concept of stunting and its prevention measures. Thus, the educational strategy implemented in the KKN program can be considered an appropriate approach in efforts to increase community awareness of stunting.

A more in-depth analysis using the N-Gain calculation showed a value of 0.93, which is in the high category. This value indicates that almost all participants experienced a substantial increase in knowledge after receiving education. Quantitatively, this increase is equivalent to an effectiveness of 93.33%, which can be categorized as highly effective. This success indicates that the learning methods applied not only convey new information but also encourage participants to understand and internalize the material provided. This also demonstrates the suitability of the education methods to the needs of the community and the effectiveness of the participants' active involvement in learning activities.

The high effectiveness of the program in terms of knowledge reflects an increase in the community's capacity to understand stunting as a form of chronic malnutrition that has a long-term impact on child growth and development. Residents have begun to realize the importance of preventive measures during the first 1,000 days of life (1000 HPK) as a crucial phase in child development. The education provided also focuses on balanced nutrition, exclusive breastfeeding, good environmental sanitation, and the importance of immunization. This increased understanding is expected to not only result in theoretical knowledge, but also encourage the community to apply practical steps in their daily lives.

Although the increase in knowledge shows very satisfactory results, the implications of this program are further related to the sustainability of stunting prevention efforts at the community level. A significant increase in knowledge is expected to be the basis for changes in community attitudes and behaviors in maintaining family health. With a better understanding, the community is expected to have a higher awareness to ensure children's nutritional needs are met and to maintain the cleanliness of the surrounding environment. Sustainable behavioral change can only be achieved if increased knowledge is supported by a real commitment to apply the information obtained in daily life.

In addition, the achievements of this KKN program also demonstrate the important role of students as agents of change in the community. Through systematic educational interventions, students have succeeded in making a positive contribution to increasing the knowledge capacity of villagers. This program serves not only as a medium for knowledge transfer, but also as a means of empowering the community in building collective awareness of the dangers of stunting. The involvement of students allows the educational process to be more interactive and communicative so that the material can be well received and understood by the community. This condition shows that the synergy between the academic world and the community can produce relevant and impactful interventions.

These findings also highlight an important challenge that must be addressed, namely ensuring that increased knowledge is actually implemented in daily behavior. Changing attitudes and behaviors requires more participatory follow-up strategies, such as the involvement of community leaders, strengthening health cadres, and integration with community-based health programs. With these strategies, increased knowledge can be accompanied by more positive attitude changes, thereby supporting the sustainability of stunting prevention efforts.

In general, the evaluation results show that stunting prevention education through the KKN program in Padukuhan Jatisawit was very effective. The high N-Gain value and program effectiveness rate of over 90% prove that educational interventions can significantly increase community knowledge. However, for these results to be more meaningful, follow-up focused on strengthening attitudes and behaviors is needed. Similar programs in the future are expected to not only prioritize knowledge, but also encourage healthy practices within families and communities. Thus, stunting prevention programs can be more effective, sustainable, and make a real contribution to reducing stunting rates at the local and national levels.

4. Conclusion And Recommendations

4.1. Conclusion

The stunting prevention education program through Community Service Program (KKN) in Padukuhan Jatisawit proved to be effective in increasing community knowledge. The evaluation results showed an increase in scores from a pretest average of 8.5 to 9.9 on the posttest. N-Gain analysis produced a value of 0.93 or an effectiveness of 93.33%, which is classified as very high. These findings indicate that interactive lecture-based education methods, discussions, and the use of leaflets can have a significant impact on expanding residents' understanding of stunting and its prevention measures. However, the challenge that arises is how to optimize this increase in knowledge so that it can be implemented in real changes in attitudes and behavior in the community.

4.2. Recommendations

Based on the research results, it is recommended that similar programs not only focus on knowledge aspects but also integrate strategies that can encourage changes in attitudes and behavior. The involvement of community leaders, health cadres, and a more intensive participatory approach needs to be strengthened so that the community can apply a healthy lifestyle in a sustainable manner. In addition, future KKN programs are expected to develop follow-up activities, such as practical

training related to nutrition, sanitation, and parenting, so that the education provided does not only stop at the cognitive level but also encourages the formation of positive habits in daily life. Thus, stunting prevention efforts will be more effective, sustainable, and have a real impact on reducing stunting rates at the community level.

5. References

Dimiati, H. (2019). Correlation between Stunting and Academic Achievement of Children Aged 9-12 Years in Idi Rayeuk, East Aceh Regency, Indonesia., 3.

Nurhanifah, D., Bianka, A., Natasya, D., Syahril, M., Sabil, S., & Khairilatilfa, S. (2024). Education and Implementation in the Management and Prevention of Stunting. *OMNICODE Journal (Journal of Omnicompetence Community Development)*. https://doi.org/10.55756/omnicode.v4i1.181.

Laely, K., Oktafiani, E., Handayani, D., Ariana, M., Usmazafi, R., & Ismawanti, A. (2023). Education on stunting prevention at the Bintang Keluarga Posyandu. *Community empowerment*. https://doi.org/10.31603/ce.8331.

Kusumawardani, L., Rasdiyanah, R., Rachmawati, U., Jauhar, M., & Rohana, I. (2020). Community-Based Stunting Intervention Strategies: A Literature Review., 8, 259-268. https://doi.org/10.20527/dk.v8i2.8555 .

Akbar, R., Kartika, W., & Khairunnisa, M. (2023). The Impact of Stunting on Child Growth and Development. Scientific Journal. https://doi.org/10.56260/sciena.v2i4.118 .

Nugroho, E., Wanti, P., Suci, C., Raharjo, B., & Najib, N. (2023). Social Determinants of Stunting in Indonesia. Public Health Journal. https://doi.org/10.15294/kemas.v18i4.40875 .

Hall, C., Bennett, C., Crookston, B., Dearden, K., Hasan, M., Linehan, M., Syafiq, A., Torres, S., & West, J. (2018). Mothers' Knowledge about Stunting in Rural Indonesia. International Journal of Child Health and Nutrition, 7, 139–145.

Haines, AC, Jones, AC, Kriser, H., Dunn, EL, Graff, T., Bennett, C., Hasan, M., Linehan, M., Syafiq, A., Torres, S., Dearden, KA, Hall, PC, West, JH, Crookston, BT, Haines, AC, Jones, AC, Dunn, EL, Linehan, M., Dearden, KA, & West, JH (2018). Analysis of knowledge, attitudes, and beliefs of rural Indonesian mothers regarding stunting. Medical Research Archives, 6(11), 1–13.

Titimeidara, MY, & Hadikurniawati, W. (2021). Implementation of the Naïve Bayes Classifier Method for Classifying Stunting Nutritional Status in Toddlers. Scientific Journal of Informatics, 9(01), 54–59. https://doi.org/10.33884/jif.v9i01.3741

Saleh, A., Syahrul, S., Hadju, V., Andriani, I., & Restika, I. (2021). The Role of Mothers in Preventing Stunting: A Systematic Review. Gaceta Sanitaria, 35, S576–S582. https://doi.org/10.1016/j.gaceta.2021.10.087

Putri, Fury Fidianti, and Hendra Sukmana. 2022. "The Village Government's Strategy in Preventing Stunting in Kedungkendo Village, Candi District, Sidoarjo Regency." Sawala: Journal of Public Administration 10(2):224–35. https://doi.org/10.30656/Sawala.V10i2.5168 .