

EFFECTIVENESS OF EDUCATION THROUGH SOCIAL MEDIA TO IMPROVE NUTRITIONAL KNOWLEDGE AND BEHAVIOR ON PREGNANT WOMEN AS A STEP TO PREVENT STUNTING : A LITERATURE REVIEW

Rofi'atul Hanifah¹, Uki Retno Budihastuti², Anik Lestari³

¹Department of Human Nutrition, Postgraduate School, Sebelas Maret University, Surakarta, Indonesia

²Department of Obstetrics and Gynecology, Moewardi General Hospital, Surakarta, Indonesia

³Faculty of Medicine and P4GKM LPPM, Sebelas Maret University, Surakarta, Indonesia

Corresponding author: rofiatulhanifah@student.uns.ac.id

ABSTRAK : EFEKTIVITAS PENDIDIKAN MELALUI MEDIA SOSIAL UNTUK MENINGKATKAN PENGETAHUAN DAN PERILAKU GIZI PADA IBU HAMIL SEBAGAI LANGKAH PENCEGAH Stunting : TINJAUAN PUSTAKA

Latar Belakang: Kejadian balita stunting (pendek) adalah salah satu permasalahan gizi kronik yang penyebabnya meliputi banyak faktor, salah satunya gizi ibu saat kehamilan. Masa kehidupan anak sejak janin di dalam kandungan ibu sampai lahir dan berusia dua tahun (1000 HPK) adalah masa-masa genting pertumbuhan dan perkembangan anak yang optimal. Kurangnya pengetahuan mengenai diet selama kehamilan menjadi hambatan utama bagi ibu hamil untuk memiliki praktik diet yang baik. Pengetahuan, sikap gizi, dan pola makan pada ibu hamil diupayakan dapat diubah melalui pendekatan secara sistematis dan terus-menerus terhadap ibu hamil. Salah satu cara yang akan digunakan untuk meningkatkan pengetahuan dan praktik gizi ibu hamil adalah edukasi dengan menggunakan media sosial.

Tujuan: Mengetahui pengaruh pemberian edukasi gizi melalui media sosial terhadap pengetahuan dan perilaku ibu hamil sebagai langkah pencegahan stunting.

Metode: Article review dibuat dengan menggunakan metode telaah pustaka. Artikel yang digunakan didapat dari mesin pencarian jurnal yang dilakukan di EBSCO, ProQuest, Science Direct dan PubMed dalam kurun waktu 10 tahun terakhir.

Hasil: Dari beberapa penelitian yang sudah dilakukan, didapatkan bahwa pemberian edukasi pada ibu hamil melalui media sosial memiliki pengaruh yang bermakna dalam peningkatan pengetahuan dan perilaku ibu hamil sebagai langkah pencegahan stunting.

Kesimpulan: Terdapat perbedaan pengetahuan dan perilaku ibu hamil mengenai pencegahan *stunting* sebelum dan sesudah pemberian edukasi gizi melalui media sosial.

Kata Kunci : Perilaku; Pengetahuan; Nutrisi; Hamil; Media Sosial

ABSTRACT

Background: Stunted toddlers are a chronic nutritional problem that stems from many factors, including the mother's nutrition during pregnancy. The period of a child's life from the fetus in the mother's womb until birth and two years old (1000 HPK) is a critical period for optimal child growth and development. Lack of knowledge about diet during pregnancy is the main obstacle for pregnant women to have good dietary practices. The knowledge, nutritional attitudes, and eating patterns of pregnant women must be changed through a systematic and continuous approach to pregnant women. Providing nutrition education using social media is an example of a method that can be used to increase nutritional knowledge and behavior of pregnant women.

Objective: To determine the effect of providing nutrition education through social media on the knowledge and behavior of pregnant women as a step to prevent stunting.

Method: Article review was created using the literature review method. The articles used were obtained from journal search engines carried out on EBSCO, ProQuest, Science Direct and PubMed within the last 10 years.

Results: From several studies that have been conducted, it was found that providing education to pregnant women through social media has an influence in increasing the knowledge and behavior of pregnant women as a step to prevent stunting.

Conclusion: There are some improvement in the knowledge and behavior of pregnant women regarding stunting prevention before and after being given nutrition education through social media.

Keywords: behavior; knowledge; nutrition; pregnant; social media

INTRODUCTION

The case of stunted (short) toddlers is a prevalent nutritional problem affecting toddlers around the world. Stunting is a condition where toddlers have less length or height compared to age. A toddler is said to be stunted if the results of measurements of length or height calculated using the Z score formula are more than minus two standard deviations from the median child growth standard according to WHO (Kemenkes RI, 2018).

Stunted toddlers is a chronic nutritional problem caused by many factors such as socio-economic conditions, maternal malnutrition during pregnancy, pain in infants, and lack of nutritional intake. When left unaddressed, stunted toddlers will experience difficulties in achieving optimal physical and cognitive development when they grow up (Kemenkes RI, 2018). The latest analysis indicates that some main causes of stunting in South Asia are poor diet in children in the early years of life, poor nutrition in women before and during pregnancy, and poor sanitation practices in households and communities (Smith and Haddad, 2015; Black et al., 2013).

Interventions should be implemented to prevent stunted growth. There are 2 stunting interventions method, namely Specific Nutrition Interventions and Sensitive Nutrition Interventions. Specific nutrition interventions are activities that directly address the occurrence of stunting, such as food intake, infections, maternal nutritional status, infectious diseases, and environmental health. Sensitive nutrition interventions include increasing the provision of clean water and sanitation facilities, increasing access and quality of nutrition and health services, increasing awareness, commitment and nutritional care practices for mothers and children, as well as increasing access to nutritious food (Bappenas, 2018).

Paying attention to mother's nutritional needs during pregnancy is an effective way to prevent stunting, given that they have to adhere with certain recommendations and nutritional adequacy figures. Pregnant women must receive balanced nutritious food, nutritional supplementation, and have their health monitored (Trihono et al., 2015; Dewey, 2016). Pregnant women have an important role in ensuring appropriate and timely interventions to prevent nutritional problems that can occur in toddlers by strengthening nutritional status during their pregnancy and breastfeeding (Kinshella et al., 2021; Christian et al., 2015). Interventions to prevent stunting must be given to mothers during the prenatal and postnatal periods (Titaley et al., 2013). A child's life from the moment they are

conceived until they reach 2 years of age (24 months) or known as 1000 HPK is a critical period in supporting optimal growth and development. It means that pregnant women who consume low nutritional intake and experience infectious diseases during conceiving will give birth to babies with low birth weight (LBW), and/or the baby's body length is below standard (Bappenas, 2018; Jamshed et al., 2020)

Diets of pregnant women in low- and middle-income countries are typically monotonous, of low quality, and dominated by plant-based food sources with little consumption of animal-based foods, fruits, and vegetables that are dense in micronutrients (Darnton and Mkparu, 2015; Lugowska and Kolanowski, 2019).

There are several factors that influence eating patterns in pregnant women, including self-motivation, knowledge, previous experience, values and beliefs, symptoms experienced during pregnancy, counseling received, environmental values and beliefs, family and environmental support, as well as also information provided (Grenier et al., 2021). Lack of knowledge about diet during pregnancy is the main obstacle for mothers to have good dietary practices (Demilew et al., 2020). The further impact is that low maternal knowledge is one of the factors that determines the incidence of stunting (Beal et al., 2018; Sofiatin et al., 2019). Health education is an essential form of intervention to increase the knowledge of pregnant women. Pregnant women must have good knowledge about nutrition during pregnancy. Education regarding nutrition and reproductive health is effective in increasing knowledge, attitudes and practices of nutrition and reproduction in pregnant women (Permatasari et al., 2021)

Knowledge has a correlation with attitude. Evidence has shown that women of childbearing age who have good knowledge also influence their attitudes towards good nutritional intake (Fasola et al., 2018; Qiu et al., 2023). Efforts are made to change the knowledge, nutritional attitudes and eating patterns of pregnant women through a continuous and systematic approach to pregnant women.

RESEARCH METHODS

Article review was created using literature review method. The articles used were obtained from journal search engines carried out on EBSCO, ProQuest, Science Direct and PubMed that are published within the last 10 years. Literature search used the keywords education, social media, nutrition, knowledge, behavior, pregnant, stunting,

with journal searches used the conjunction "AND" or "OR". Data were analyzed using a table containing

the name of the researcher, title of the article, year, methodology and research results.

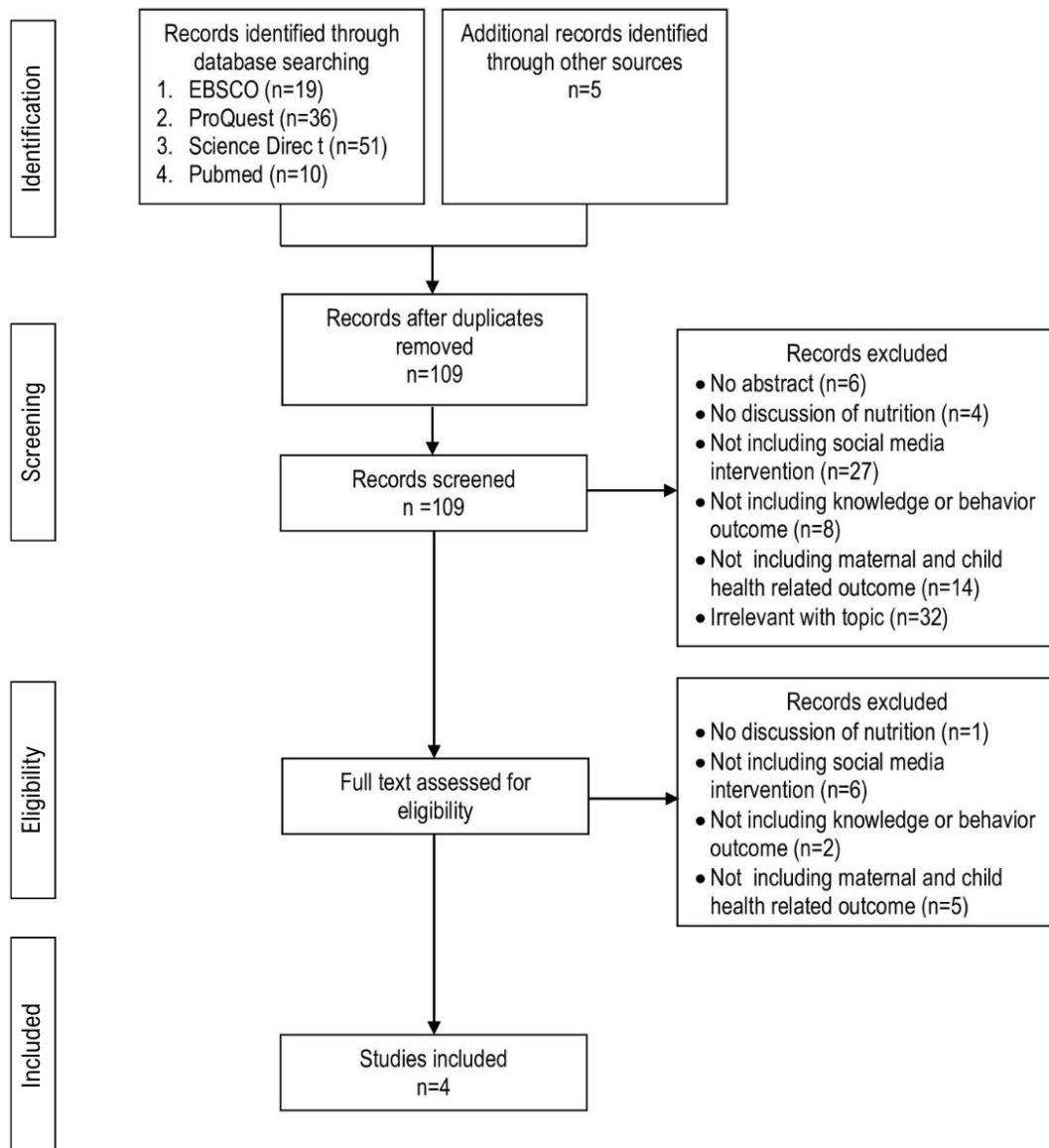


Figure 1. Article selection flow.

RESULTS

Table 1
Results obtained

Title	Methods	Sample Size	Output
A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women (Wyst et al., 2019)	Pilot Study	10 adolescent s and 12 adults	After the social media intervention, adolescents were significantly better at identifying fiber-rich foods, recommended fruit and vegetable intakes, proportion of daily whole grain consumption, and understanding that a variety of fruit and vegetable colors are healthy. Meanwhile, adults remained better at identifying recommended fruit and vegetable intakes, and the maximum recommended percentage of daily

			fat intake. Both adults and adolescents in New York also mentioned making dietary changes and engaging in exercise during pregnancy.
Effect of a social media-based health education program on postnatal care (PNC) knowledge among pregnant women using smartphones in Dhulikhel hospital: A randomized controlled trial (Id et al., 2023)	Randomized controlled trial	229 pregnant women	A social media-based health education is effective in improving knowledge score among pregnant women. More than three-fourth of the participants were aware of protein, carbohydrate, vitamins and high fluid intake as necessary diet for postpartum mothers.
Exploring Perceptions and Needs of Mobile Health Interventions for Nutrition, Anemia, and Preeclampsia among Pregnant Women in Underprivileged Indian Communities: A Cross-Sectional Surve (Choudhury et al., 2023)	Cross-sectional	131 pregnant mothers	A significant 61% (80 respondents) responded positively to the idea, indicating that they or someone in their household would be interested in such an application.
Mobile Phone-Based Nutrition Education Targeting Pregnant and Nursing Mothers in Sri Lanka (Peiris et al., 2023)	Before and after within-subject design	720 pregnant and nursing mothers	In the post-assessment, it was found that the participants' knowledge, attitude, social norms, and behaviour intentions were higher than in the pre-assessment. However, only knowledge and attitude showed a statistically significant difference. Practices on consumption of 10 main food groups (consist of grains, white roots and tubers, plantains, nuts and seeds, dairy, meat, poultry, fish, dark green leafy vegetables, other vegetables, and fruits) using the minimum dietary diversity for women indicator showed a statistically significant improvement.

DISCUSSION

Along with the development of technology, teaching and learning process or providing education using social media is something that has been implemented in the past decade (Kumiyebaoh, 2017). Currently, accessing social media through mobile phones is common even in communities with low incomes. Several studies conducted among low-income pregnant women and adult communities on the use of social media on mobile phones have shown positive results in nutrition-related outcomes. The same results were also obtained when the intervention was carried out on teenagers.

Studies that the author has obtained show good results on the knowledge of pregnant women after being given intervention in the form of education using social media. A study conducted on low-income teenagers and adult women who were

pregnant in New York showed positive changes in their knowledge and attitudes before and after being given intervention in the form of messages via Facebook and SMS. Another study conducted on pregnant women in Nepal who received intervention in the form of videos via social media showed an increase in knowledge among the participants. The next study conducted on pregnant and breastfeeding mothers in Sri Lanka who received intervention via text messages and social media messages also demonstrated positive results in knowledge, attitudes, practices, social norms, and behavior. In the measurements taken after the intervention was given, the knowledge, attitudes, social norms and behavioral intentions of the sample were higher than before the intervention was given. The results of knowledge and attitude measurements showed statistically significant differences, but measurements of social norms and

the attitude was not statistically significant. The fourth article assessed pregnant mothers' perceptions on health interventions through mobile phone for managing anemia and preeclampsia. This article showed that the majority (80%) of their respondents were interested and gave positive responses regarding the idea of health intervention using mobile phone.

Providing education via social media has several advantages, including saving costs, being fast, easy to access, and flexible because mobile phones can be taken anywhere (Lamont et al., 2016; Evans et al., 2014; Stellefson et al., 2020). Additionally, learning privately using a mobile phone reduces the feeling of being observed. Participants also enjoyed receiving educational messages via social media and found that the information has benefits so they paid serious attention to it. Mobile application-based interventions that are accompanied by counseling and carried out interactively by implementing two-way communication will get positive results because participants can do both send and receive health messages. Other factors that influence the change in average knowledge in the intervention group include the age of the woman and her partner, their education level, their occupation, monthly income, and place of residence (Id et al., 2023). In line with this, family support also influences changes in knowledge, attitudes and nutritional practices of pregnant women. Family members will accompany pregnant mother to discuss plans for improving nutrition, supporting the pregnant mother in adopting a better diet (Wyst et al., 2019). This is in line with a study which states that a father's good knowledge of eating patterns influences the family's eating patterns (Ambikapathi et al., 2021).

One of the obstacles that may be faced in encouraging education through social media among low- and middle-income countries is low network capacity and low access to mobile phones. Education using video media carried out in low income countries in urban scope gives effective results and this cannot be generalized to rural environment (Id et al., 2023). Another study stated that the obstacles of education using social media were the poor quality of the information and the possibility of miscommunication (Hagg et al., 2020). The limitations of research with interventions using social media are external factors that researchers cannot predict, for example participants could be influenced by information from outside such as from mass media. This way, interventions using social media combined with other media may be more effective

(Wyst et al., 2019). Overall, The implementation of education using social media must be supported by primary health service system from local to national level so that it can be utilized more optimally (Peiris et al., 2023). Researchers think that providing education through social media is an effective way to be implemented in the era of technological development nowadays. However, the government must be actively involved by incorporating this into programs in public health facilities so that this idea will be implemented systematically and receives support from across sectors. With support from across sectors, the obstacles such as low network capacity and low access to mobile phones can be sought together with other policy stakeholders.

CONCLUSION(S)

There are significant differences in the knowledge of pregnant women regarding stunting prevention before and after providing nutrition education through social media.

SUGGESTION

Future intervention is needed to identify the implementation of social media intervention for knowledge dissemination so it can be more enjoyable and effective

CONFLICT OF INTEREST

The author(s) have no conflict of interest associated with the material presented in this paper.

ACKNOWLEDGMENT

None.

REFERENCES

- Ambikapathi, R., Passarelli, S., Madzorera, I., Canavan, C. R., Noor, R. A., Abdelmenan, S., Tewahido, D., Tadesse, A. W., Sibanda, L., Sibanda, S., Munthali, B., Madzivhandila, T., Berhane, Y., Fawzi, W., & Gunaratna, N. S. (2021). Men's nutrition knowledge is important for women's and children's nutrition in Ethiopia. *Maternal and Child Nutrition*, 17(1), 1–13. <https://doi.org/10.1111/mcn.13062>
- Beal, T., Tumilowicz, A., Sutrisna, A., Izwardy, D., dan Neufeld, L. M. (2018). A review of child stunting determinants in Indonesia. *Maternal and Child Nutrition*, 14(4), 1–10. <https://doi.org/10.1111/mcn.12617>
- Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-Mcgregor, S., Katz, J., Martorell,

- R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451. [https://doi.org/10.1016/S0140-6736\(13\)60937-X](https://doi.org/10.1016/S0140-6736(13)60937-X)
- Choudhury, A., Shahsavar, Y., Sarkar, K., Choudhury, M. M., Nimbarte, A. D. (2023). Exploring Perceptions and Needs of Mobile Health Interventions for Nutrition, Anemia, and Preeclampsia among Pregnant Women in Underprivileged Indian Communities: A Cross-Sectional Survey. *Nutrients* 2023, 15, 3699. <https://doi.org/10.3390/nu15173699>
- Christian, P., Mullany, L. C., Hurley, K. M., Katz, J., & Black, R. E. (2015). Nutrition and maternal, neonatal, and child health. *Seminars in Perinatology*, 39(5), 361–372. <https://doi.org/10.1053/j.semperi.2015.06.009>
- Darnton-Hill, I., dan Mkparu, U. C. (2015). Micronutrients in pregnancy in low- and middle-income countries. *Nutrients*, 7(3), 1744–1768. <https://doi.org/10.3390/nu7031744>
- Demilew, Y. M., Alene, G. D., dan Belachew, T. (2020a). Effect of guided counseling on dietary practices of pregnant women in West Gojjam Zone, Ethiopia. *PLoS ONE*, 15(5), 1–11. <https://doi.org/10.1371/journal.pone.0233429>
- Dewey, K. G. (2016). Reducing stunting by improving maternal, infant and young child nutrition in regions such as South Asia: Evidence, challenges and opportunities. *Maternal and Child Nutrition*, 12, 27–38. <https://doi.org/10.1111/mcn.12282>
- Evans WD, Bihm JW, Szekely D, Nielsen P, Murray E, Abrams L, et al. Initial Outcomes From a 4-Week Follow-Up Study of the Text4baby Program in the Military Women's Population: Randomized Controlled Trial. *J Med Internet Res*. 2014;16. <https://doi.org/10.2196/jmir.3297> PMID: 24846909
- Fasola, O., Abosede, O., dan Fasola, F. A. (2018). Knowledge, attitude and practice of good nutrition among women of childbearing age in Somolu Local Government, Lagos State. *Journal of Public Health in Africa*, 9(1), 42–46. <https://doi.org/10.4081/jphia.2018.793>
- Forbes, L. E., Graham, J. E., Berglund, C., dan Bell, R. C. (2018). Dietary change during pregnancy and women's reasons for change. *Nutrients*, 10(8), 1–10. <https://doi.org/10.3390/nu10081032>
- Grenier, L. N., Atkinson, S. A., Mottola, M. F., Wahoush, O., Thabane, L., Xie, F., Vickers-Manzin, J., Moore, C., Hutton, E. K., dan Murray-Davis, B. (2021). Be Healthy in Pregnancy: Exploring factors that impact pregnant women's nutrition and exercise behaviours. *Maternal and Child Nutrition*, 17(1), 1–9. <https://doi.org/10.1111/mcn.13068>
- Hagg, E., Dahinten, V. S., & Currie, L. M. (2020). The emerging use of social media for health-related purposes in low and middle-income countries: A scoping review. *International Journal of Medical Informatics*, 115(2018), 92–105. <https://doi.org/10.1016/j.ijmedinf.2018.04.010>
- Id, K. C., Shrestha, K., & Karmacharya, M. (2023). Effect of a social media-based health education program on postnatal care (PNC) knowledge among pregnant women using smartphones in Dhulikhel hospital: A randomized controlled trial. 1–23. <https://doi.org/10.1371/journal.pone.0280622>
- Jamshed, S., Khan, F., Begum, A., Ali, B. B., & Akram, Z. (2020). Frequency of Low Birth Weight and its Relationship With Maternal Nutritional and Dietary Factors: A Cross-Sectional Study. 12(6), 6–13. <https://doi.org/10.7759/cureus.8731>
- Kementerian PPN/ Bappenas. (2018). *Pedoman Pelaksanaan Intervensi Penurunan Stunting Terintegrasi di Kabupaten/Kota. Rencana Aksi Nasional Dalam Rangka Penurunan Stunting: Rembuk Stunting*, November, 1–51. <https://www.bappenas.go.id>
- Kemenkes RI. (2018). *Buletin Stunting*. Kementerian Kesehatan RI, 301(5), 1163–1178.
- Kinshella, M. L. W., Moore, S. E., dan Elango, R. (2021). The missing focus on women's health in the First 1,000 days approach to nutrition. *Public Health Nutrition*, 24(6), 1526–1530. <https://doi.org/10.1017/S1368980020003894>
- Kumi-yebaoh, A. (2017). *Handbook of Research on Education and Technology in a Changing Society*. January 2014. <https://doi.org/10.4018/978-1-4666-6046-5.ch017>
- Lamont K, Sliwa K, Stewart S, Carrington M, Pretorius S, Libhaber E, et al. Short message service(SMS) as an educational tool during pregnancy: A literature review. *Health Educ J*: 1–13. <https://doi.org/10.1177/0017896915607910>

- Ługowska, K., and Kolanowski, W. (2019). The nutritional behaviour of pregnant women in Poland. *International Journal of Environmental Research and Public Health*, 16(22).
<https://doi.org/10.3390/ijerph16224357>
- Peiris, D. R., Supun, M., & Wijesinghe, D. (2023). *Mobile Phone-Based Nutrition Education Targeting Pregnant and Nursing Mothers in Sri Lanka*.
- Permatasari, T. A. E., Rizqiya, F., Kusumaningati, W., Suryaalamasah, I. I., & Hermiwahyoeni, Z. (2021). The effect of nutrition and reproductive health education of pregnant women in Indonesia using quasi experimental study. *BMC Pregnancy and Childbirth*, 21(1), 1–15. <https://doi.org/10.1186/s12884-021-03676-x>
- Qiu, Y., Ding, C., Zhang, Y., Yuan, F., Gong, W., Zhou, Y., Song, C., Feng, J., Zhang, W., & Liu, A. (2023). The Nutrition Knowledge Level and Influencing Factors among. *Nutrients*, 2017, 1–11.
<https://doi.org/10.3390/nu15092034>
- Smith, L. C., dan Haddad, L. (2015). Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era. *World Development*, 68(1), 180–204.
<https://doi.org/10.1016/j.worlddev.2014.11.014>
- Sofiatin, Y., Pusparani, A., Judistiani, T. D., Rahmalia, A., Diana, A., & Alisjahbana, A. (2019). Maternal and environmental risk for faltered growth in the first 5 years for Tanjungsari children in West Java, Indonesia. *Asia Pacific Journal of Clinical Nutrition*, 28(20), 32–42.
[https://doi.org/10.6133/apjcn.201901_28\(S1\).0003](https://doi.org/10.6133/apjcn.201901_28(S1).0003)
- Stellefson, M., Paige, S. R., Chaney, B. H., & Chaney, J. D. (2020). *Evolving Role of Social Media in Health Promotion: Updated Responsibilities for Health Education Specialists*.
- Titaley, C. R., Ariawan, I., Hapsari, D., & Muasyaroh, A. (2013). Determinants of the Stunting of Children in Indonesia : A Multilevel Analysis of the 2013 Indonesia Basic Health Survey. *Nutrients*, 11, 1160.
- Trihono, Atmarita, Tjandrarini D. Pendek (stunting) di Indonesia, masalahdansolusinya. Pertama. (Sudomo M, ed.). Jakarta: LembagaPenerbitBalitbangkes; 2015. www.litbang.depkes.go.id.
- Wyst, K. B. Vander, Vercelli, M. E., O'Brien, K. O., Cooper, E. M., Pressman, E. K., & Whisner, C. M. (2019). A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women. *PLoS One*, 14(10).
<https://doi.org/https://doi.org/10.1371/journal.pone.0223120>