



The Columbia University

JOURNAL of GLOBAL HEALTH

Persistent Child Malnutrition in Dhaka: Integrating Political Considerations and Multisectoral Interventions for Solutions Moving Forward

Shafkat Meraj, BA^{1,2}, Shaheem Nuraj³

¹The Johns Hopkins University, Krieger School of Arts and Sciences, Baltimore, MD, USA

²The Johns Hopkins University, Bloomberg School of Public Health, International Health Department, Baltimore, MD, USA

³Loveless Academic Magnet Program (LAMP) High School, AL, USA

ABSTRACT One of the world's most densely populated cities in the world, the Bangladesh capital Dhaka continues to grapple with its persisting challenge of child malnutrition. While food shortages, food insecurity, and inadequate feeding practices contribute to child malnutrition, various social and economic determinants, including maternal education, family household income, and geographic residence further exacerbate the problem. While interventions like the National Nutrition Services intervention, Health Sector Support Project, and National Nutrition Programme have made strides in reducing short-term and long-term child malnutrition, challenges such as implementation specificity issues and insufficient coverage hamper their overall scope and effectiveness. To address issues hampering funding capacity and the breadth and quality of nutrition-related services, it is necessary to understand the factors affecting them. These factors include political commitment toward child nutrition, policy alignment, program design and implementation, monitoring and evaluation, and intervention strategies and service delivery. Moving forward, comprehensive strategies taking into account political prioritization, multisectoral coordination, and targeted primary intervention strategies are crucial for tackling child malnutrition effectively in LMICs and cities like Dhaka and beyond.

KEY WORDS child malnutrition, global health, political priority, multisectoral coordination, preventative public health

INTRODUCTION: MATERNAL AND CHILD MALNUTRITION IN DHAKA

One of the world's most densely-populated areas with a population exceeding 23.9 million, Dhaka confronts a complex array of issues amidst its rapid growth and development, grappling with urban sprawl and its associated effects of heightened pollution, congestion, and poverty [1]. Moreover, the city contends with the compounding impacts of climate change, exacerbating existing vulnerabilities across sectors like health, food security, and infrastructure [2]. Despite strides in urbanization, Dhaka particularly faces persistent challenges in combating child malnutrition, affecting a staggering 73% of street children [3]. Data further underscores the prevalence of stunted (36%) and underweight (33%) children under the age of five, alongside alarming rates of anemia among pregnant women (40%) and young infants (80%) [4]. Specifically, the majority of the children in Dhaka experience protein-energy malnutrition, iron deficiency anemia, iodine deficiency disorders, and vitamin A deficiency [5-6].

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits the user to copy, distribute, and transmit the work provided that the original author(s) and source are credited.

Send correspondence to: SMERAJ123456@GMAIL.COM

Studies indicate that childhood undernutrition leads to behavioral issues, hindered mental development, low academic performance, increased infection risks, higher mortality rates, and weakened immune systems [7-8]. The World Health Organization explains that malnutrition escalates healthcare expenses, diminishes productivity, and hinders economic progress, contributing to a cycle of poverty and ill health [9]. Considering such individual and large-scale implications of child malnutrition, it is necessary to employ strategic actions and interventions in addressing this pressing issue in Dhaka. As such, this paper will synthesize existing literature delineating the current state of Dhaka's child malnutrition and summarize some key considerations that are necessary for addressing deficiencies in child nutrition services and programming moving forward. Drawing on health policy frameworks and successful child nutrition programming strategies from other LMICs, we will provide suggestions to incorporate into the existing child nutrition governance and infrastructure in Dhaka.

UNDERLYING ISSUE DETERMINANTS

Research on the determinants of malnutrition in children under five in Dhaka's slum areas highlights various social and economic factors, such as maternal education, family income, and family size [10]. Malnourishment is notably higher among illiterate mothers and lower-income households, while larger family sizes correlate with an increased prevalence of wasting, stunting, and underweight children [10]. Dietary intake, feeding practices, and duration also play crucial roles, with non-breastfed and inadequately breastfed infants facing higher malnutrition risks [10-11]. Health and nutritional knowledge are also significant determinants in urban slum areas [12]. Moreover, studies on preschool children in Dhaka emphasize other consistent determinants like intrauterine growth retardation, food scarcity, and micronutrient deficiencies [5].

Looking broadly, feeding practices play a crucial role in malnutrition, with significantly higher rates observed among non-breastfed babies and those breastfed for only six months without adequate complementary feeding [10]. Maternal socio-demographic and health profiles, including low family income and unmarried status, significantly influence child malnutrition, while other socio-economic factors such as household food insecurity, household wealth status, parental schooling, access to health and sanitation services, prenatal care, and professional child delivery facilities are key determinants [13-15]. Stratified analyses reveal that females across all age groups exhibit higher odds of undernourishment compared to males, and certain slums, like Beribadh, pose elevated malnutrition risks [16]. Maternal stature and birth intervals also impact malnutrition prevalence, contributing to socioeconomic inequalities, particularly in stunting, while factors like the mother's age, birth order, employment status, and region have minimal effects [14].

DOMINANT SOLUTIONS OVER THE YEARS

In 2009, Nutrition became a key national priority in Bangladesh after the Annual Program Review of the Health, Nutrition, and Population Sector Program (HNPPSP) of the World Bank recommended the expansion and scaling up of nutrition services and planning [45]. Over the years, various solutions have been proposed and implemented in Dhaka to address malnutrition, and in 2011, the operational plan (OP) of the National Nutrition Services (NNS) was approved and implemented by the Bangladesh government. Within the first few years of this intervention, while progress was made in increasing nutrition metrics for children and the overall population, two key deficiency areas emerged from research evaluations [45]. The first emergent issue was the lack of specificity in choosing key intervention areas, which resulted in the overburdening of the NNS, as there were too many intervention areas to address and implement effectively [45]. The second issue was the limited investment and utilization of preventative outreach programs for delivery platforms as public health curative care facilities. As a result of this, many access barriers and gaps persisted [45].

One of the most successful initiatives included the Health Sector Support Project under the Fourth Health, Population, and Nutrition Sector Program led by the Bangladeshi government with support from the World Bank. This initiative aimed to deliver essential nutrition and health resources and services through the government's health system while raising awareness about breastfeeding and complementary feeding practices [17]. Despite notable successes over the past 5 years, including significant increases in maternal and child nutrition services, challenges persist, including a lack of expertise among health professionals for nutritional counseling, inadequate connectivity for online reporting, and insufficient growth monitoring equipment [17]. Additionally, the program targets only registered families and those with children showing signs of malnutrition, potentially missing the crucial "window of opportunity" (the period between conception to 24 months) for effective nutritional interventions, which is vital for long-term physical and mental development [18].

Similarly, the National Nutrition Programme (NNP), implemented by the government and local NGOs, aimed to address malnutrition in Dhaka by providing tailored nutrition packages to families in need, reaching about 30% of the population in 2012 [19]. However, it faced weaknesses such as low nutritional quality, limited accountability, failure to cater to severe acute malnutrition, and inability to reach slum areas or provide micronutrient supplements [19]. While both the NNP and the Health Sector Support Project targeted various aspects of malnutrition, including food provision, education, and health services, they lacked strong monitoring and evaluation mechanisms and failed to effectively target the "window of opportunity" for preventive measures [18]. Additionally, addressing socioeconomic inequalities, particularly women's education, was overlooked in both solutions [20].

KEY CONSIDERATIONS AND PROPOSED CHANGES FOR SOLUTIONS MOVING FORWARD

Considering Dhaka's history of child malnutrition, if appropriate and tangible actions are not taken, then Dhaka risks falling short of reaching SDG target 2.2 about malnutrition [21]. Thus, to effectively address child malnutrition in Dhaka, incremental yet comprehensive solutions encompassing both short-term interventions to reduce malnutrition post-onset and long-term primary preventative measures to prevent its initial onset are crucial. Effective strategies in low- and middle-income countries (LMICs) have involved multisectoral and multidimensional approaches incorporating educational initiatives, comprehensive nutritional packages, and coordinated efforts and policies to reduce systemic poverty and health inequities [22].

Political Considerations: Political Priority and Multi-Sectoral Coordination

Political prioritization toward child nutrition is a key consideration that needs to be analyzed as political commitment influences the investment, time, and resources given to this issue in comparison to other competing priorities in Dhaka. According to a review and framework synthesis on global and national political commitment to nutrition, factors known to influence political priority include the following: "effective nutrition actor networks, strong leadership, civil society mobilization, supportive political administrations, societal change and focusing events, cohesive and resonant framing, and robust data systems and available evidence" [23]. Among these factors, it is critical to analyze the current framing approach and reform it to be most effective in increasing political commitment and attention to child malnutrition. Effective framing approaches include those that clearly explain the issue dynamics and magnitude of the problem and "hook nutrition" to other high-priority non-nutrition issues by explaining, for example, the effects of child malnutrition on the city's economy and productivity [23]. Increased political commitment theoretically comes with increased financial support for the issue at hand, and considering the difficulty in adjusting a city budget for a rapidly growing megalopolis like Dhaka, even incremental increases in budget allocation from increased political priority will help in further addressing Dhaka's child nutrition issue more effectively [44].

Based on other LMICs, successfully addressing multiple determinants of child malnutrition requires strong multi sectoral governance and coordination between national, subnational, and community actors. Additionally, strong national and city policies, and consistent monitoring and evaluation mechanisms are beneficial [24-26]. Looking at research examining policies at the national level, common gaps include accessibility issues, lack of specificity, and misalignment with intended goals [34]. For more effective and targeted child nutrition and overall policymaking and impact, nutrition policies, strategies, and directives need to be specific and standardized at the city and national levels [34]. Considering the specificity issues of the original NNS, it is critical to balance the number of key intervention areas implemented with the program's capacity, quality, and effectiveness. The best way to do this is to implement key intervention areas while incrementally adding new intervention targets upon timely progress deadlines. To increase policy and program specificity, alignment, and comprehensiveness, closer coordination between nutrition and child health units within the Ministries of Health and other relevant sectors and ministries may be potentially useful [34]. Additionally, mapping direct nutrition plans (DNIs) and identifying specific delivery platforms before implementation will be useful in maximizing the coverage and outreach of overall nutrition services and child nutrition services [45].

Similarly, sufficient and robust monitoring and evaluation mechanisms need to be in place to ensure timely progress and thorough, credible framing of the issue. Research shows that current national surveys and the routine monitoring data systems in place are lacking key indicators needed for tracking child and maternal nutrition effectively [28, 34]. The lack of sufficient and comprehensive data may indicate the lack of political priority and accountability, and efficient planning and targeted resource delivery cannot adequately be achieved [34]. Effective comprehensive data collection, monitoring, and evaluation mechanisms will also ensure effective issue framing, accountable nutrition governance, and action in making adjustments for consistent progress.

Taking into account these governance and bureaucratic considerations will be key for short-term and long-term policy-making, solution implementation, and problem resolution.

Considering the complexity of the food system and child malnutrition in Dhaka, concerted efforts need to be taken to ensure policy and program actions translate into quality and equitable coverage of nutrition services, and to do so multisectoral coordination between the nutrition sector and other government public sectors, donors, private sectors, stakeholders, and community-level actors is needed [27-28]. To ensure such coordination, it is equally imperative to maintain effective governance via strong and stable political and technical leadership of the nutrition program to ensure integrated, well-coordinated service planning, implementation, and delivery [45]. Mapping and establishing clear, actionable roles and tasks for the many government actors, donors, and stakeholders will be necessary as coordinated stakeholder support is critical in ensuring funding, progress, technical support, program implementation, service delivery, and monitoring and evaluation for child nutrition in Dhaka [45].

Considering the impact of socioeconomic inequalities and systemic disparities within the social determinants of health, it is necessary to simultaneously tackle issues related to mass poverty, educational disparities, and unemployment, among others. Integrated policymaking and multisectoral coordination with sectors like finance, employment, and education will be imperative in tackling such systemic issues. Also, continuing to utilize and increase community-level partnerships and large-scale community-based approaches can further empower communities and improve nutritional status while also increasing multisectoral coordination and nutrition governance [29]. Similarly, utilizing community delivery platforms can increase the amount of human staff resources available to the system, coverage and breadth of services, and improve the equity of service delivery by reducing access barriers [30-31]. Specifically, building partnerships with voluntary organizations, NGOs, and private relief foundations to transport and distribute essential nutrition services, education, and counseling will help in increasing access for families and children, especially considering their impact in filling voids left by government efforts and during difficult times such as the COVID-19 Pandemic and famines [32-33, 45].

Primary Intervention Strategies: Nutrition Education and Reducing Systemic Inequities

While making incremental changes, we recommend using the current infrastructure of the Health Sector Support Project and NNP and scaling it up to include more quality nutrition-sensitive services, multisectoral coordination between government and private stakeholders, and monitoring and evaluation mechanisms to track progress. With the Health Sector Support Project already reaching 30% of the country's population in the past 6-7 years, continued expansion holds promise for further reducing and preventing child and maternal malnutrition across Dhaka and ultimately the rest of Bangladesh, one step at a time [17].

Considering the Health Sector Support Project's project in increasing awareness of maternal nutrition, breastfeeding, and child complementary feeding practices, it is critical to continue implementing such education-focused primary intervention strategies and maternal nutrition counseling as they have proven to be successful in reducing child malnutrition in many LMIC settings [17, 35-37]. As for project expansion, it is necessary to scale up interventions targeting maternal malnutrition since maternal nutrition is associated with newborn survival, child growth, and child development [38]. Specifically, targeting malnutrition and micronutrient deficiencies of pregnant women is imperative as malnutrition before, during, and after pregnancy can adversely affect maternal health, fetal health, newborn health and survival, and child health [27, 34, 39-40]. Some of the most common micronutrient deficiencies include Vitamin D, B12, iron, and folate, which have been linked to adverse maternal and infant health effects [40]. As such, to enhance primary prevention for both pregnant mothers and children, the project should continue expanding and incorporating products increasing dietary diversity, micronutrient supplements, and probiotic supplements, alongside fortified, protein-rich food packages, addressing prevalent protein-energy malnutrition and micronutrient deficiencies in Dhaka [5-6]. For example, fortified foods like beta-carotene-rich options and golden rice have demonstrated success in reducing maternal and older child malnutrition [22].

Lastly, increasing and ensuring accessible and quality infrastructure for primary health care services is crucial as they are uniquely poised to deliver maternal and child nutrition services, especially in LMICs [41]. Specifically, primary health care providers can aid in diagnosing early malnutrition in children and in monitoring nutrition-related indicators over time [41-42]. In Dhaka and other parts of Bangladesh, research shows gaps in service provision, healthcare providers' knowledge and capacity, and nutrition service delivery exist within primary care facilities [43]. As such, it is important to fill these gaps by increasing priority, coverage, capacity, and resources for nutrition services provision when designing primary healthcare [43].

CONCLUSION

Child malnutrition is a complex issue that encompasses factors beyond just insufficient food intake. Many other factors such as socioeconomic inequalities, health infrastructure, and policy and legislation also contribute to the problem. Key considerations and strategies such as increasing political prioritization of child nutrition, employing multi sectoral planning and coordination efforts, and implementing integrated primary intervention strategies can all potentially aid in combating child malnutrition in LMICs and cities like Dhaka. While the considerations and strategies suggested were made taking into account the specific circumstances within Dhaka, these principles can be applied to other cities and LMICs with modifications based on their circumstances, needs, and further research.

REFERENCES

1. *Dhaka Population 2023*. World Population Review. (n.d.). Retrieved January 29, 2024, from <https://worldpopulationreview.com/world-cities/dhaka-population>.
2. Haque, S. E., Tsutsumi, A., & Capon, A. (2014). *Sick cities: A scenario for Dhaka City*. Our World. Retrieved April 12, 2023, from <https://ourworld.unu.edu/en/sick-cities-a-scenario-for-dhaka-city>.
3. Hakim, M. A., & Rahman, A. (2016). Health and nutritional condition of street children of Dhaka city: an empirical study in Bangladesh. *Science Journal of Public Health*, 4(1-1), 6-9.
4. Hasan, M. M., Uddin, J., Pulok, M. H., Zaman, N., & Hajizadeh, M. (2020). Socioeconomic Inequalities in Child Malnutrition in Bangladesh: Do They Differ by Region?. *International journal of environmental research and public health*, 17(3), 1079.
5. Jesmin, A., Yamamoto, S. S., Malik, A. A., & Haque, M. A. (2011). Prevalence and determinants of chronic malnutrition among preschool children: a cross-sectional study in Dhaka City, Bangladesh. *Journal of health, population, and nutrition*, 29(5), 494-499.
6. Rahman, M. H., & Alam, S. S. (2015). Nutritional status of children in slums of Dhaka. *Bangladesh. J Nutr Food Sci*, 5(6), 1.
7. Martins, V. J., Toledo Florêncio, T. M., Grillo, L. P., do Carmo P Franco, M., Martins, P. A., Clemente, A. P., Santos, C. D., de Fatima A Vieira, M., & Sawaya, A. L. (2011). Long-lasting effects of undernutrition. *International journal of environmental research and public health*, 8(6), 1817-1846.
8. Rytter, M. J. H., Kolte, L., Briend, A., Friis, H., & Christensen, V. B. (2014). The immune system in children with malnutrition—a systematic review. *PLoS one*, 9(8), e105017.
9. World Health Organization. (n.d.). *Malnutrition*. World Health Organization. Retrieved January 11, 2024, from https://www.who.int/health-topics/malnutrition#tab=tab_1.
10. Hoque, M. A., Annur, B. M., Sayeed, M. A., & Mamun, M. A. (2021). Risk Factors of Malnutrition in Under-5 Children of Slum Area in Dhaka City. *Mymensingh medical journal: MMJ*, 30(1), 196-201.
11. Rabbi, A. M. F., & Karmaker, S. C. (2015). Determinants of child malnutrition in Bangladesh-A multivariate approach. *Asian journal of medical sciences*, 6(2), 85-90.
12. Fakir, A. M., & Khan, M. W. R. (2015). Determinants of malnutrition among urban slum children in Bangladesh. *Health economics review*, 5, 1-11.
13. Tette, E., Sifah, E. K., Nartey, E. T., Nuro-Ameyaw, P., Tete-Donkor, P., & Biritwum, R. B. (2016). Maternal profiles and social determinants of malnutrition and the MDGs: What have we learnt?. *BMC public health*, 16(1), 1-11.
14. Huda, T. M., Hayes, A., El Arifeen, S., & Dibley, M. J. (2018). Social determinants of inequalities in child undernutrition in Bangladesh: A decomposition analysis. *Maternal & child nutrition*, 14(1), e12440.
15. Mohsena, M., Hossain, M., Chakraborty, B., Bayes, A., & Rahman, A. M. (2018). Fragile environment, seasonality and maternal and childhood undernutrition in Bangladesh. *Journal of biosocial science*, 50(5), 579-603.
16. Pryer, J. A., & Rogers, S. (2006). Epidemiology of undernutrition in adults in Dhaka slum households, Bangladesh. *European journal of clinical nutrition*, 60(7), 815-822.
17. Chaudhery, D. (2019). *Improving nutrition services in Bangladesh*. World Bank. Retrieved January 5, 2023, from <https://blogs.worldbank.org/endpovertyinsouthasia/improving-nutrition-services-bangladesh>
18. Ahmed, T., & Ahmed, A. S. (2009). Reducing the burden of malnutrition in Bangladesh. *Bmj*, 339.
19. Ahmed, T., Mahfuz, M., Ireen, S., Ahmed, A. M., Rahman, S., Islam, M. M., Alam, N., Hossain, M. I., Rahman, S. M., Ali, M. M., Choudhury, F. P., & Cravioto, A. (2012). Nutrition of children and women in Bangladesh: trends and directions for the future. *Journal of health, population, and nutrition*, 30(1), 1-11.
20. Islam, M. R., Rahman, M. S., Rahman, M. M., Nomura, S., De Silva, A., Lanerolle, P., ... & Rahman, M. M. (2020). Reducing childhood malnutrition in Bangladesh: the importance of addressing socio-economic inequalities. *Public health nutrition*, 23(1), 72-82.
21. Rajja, S., Sabiruzzaman, M., Islam, M. K., Hossain, M. G., & Lestrel, P. E. (2019). Trends and future of maternal and child health in Bangladesh. *PLoS one*, 14(3), e0211875.
22. Keats, E. C., Das, J. K., Salam, R. A., Lassi, Z. S., Imdad, A., Black, R. E., & Bhutta, Z. A. (2021). Effective interventions to address maternal and child malnutrition: an update of the evidence. *The Lancet. Child & adolescent health*, 5(5), 367-384.
23. Baker, P., Hawkes, C., Wingrove, K., Demaio, A. R., Parkhurst, J., Thow, A. M., & Walls, H. (2018). What drives political commitment for nutrition? A review and framework synthesis to inform the United Nations Decade of Action on Nutrition. *Bmj global health*, 3(1), e000485.
24. Ruel, M. T., & Alderman, H. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?. *The Lancet*, 382(9891), 536-551.
25. González-Fernández, D., Mazzini Salom, A. S., Herrera Bendezu, F., Huamán, S., Rojas Hernández, B., Pevec, I., Galarza Izquierdo, E. M., Armstrong, N., Thomas, V., Vela González, S., Gonzáles Saravia, C., Scott, M. E., & Koski, K. G. (2020). A Multi-Sectoral Approach Improves Early Child Development in a Disadvantaged Community in Peru: Role of Community Gardens, Nutrition Workshops and Enhanced Caregiver-Child Interaction: Project "Wawa Illari". *Frontiers in public health*, 8, 567900.
26. Gaihre, S., Kyle, J., Semple, S., Smith, J., Marais, D., Subedi, M., & Morgan, H. (2019). Bridging barriers to advance multisector approaches to improve food security, nutrition and population health in Nepal: transdisciplinary perspectives. *BMC public health*, 19, 1-14.
27. Goudet, S., Murira, Z., Torlesse, H., Hatchard, J., & Busch-Hallen, J. (2018). Effectiveness of programme approaches to improve the coverage of maternal nutrition interventions in South Asia. *Maternal & child nutrition*, 14, e12699.
28. Kavle, J. A., & Landry, M. (2018). Addressing barriers to maternal nutrition in low-and middle-income countries: A review of the evidence and programme implications. *Maternal & child nutrition*, 14(1), e12508.

29. Choudhury, N., Raihan, M. J., Ahmed, S. M. T., Islam, K. E., Self, V., Rahman, S., Schofield, L., Hall, A., & Ahmed, T. (2020). The evaluation of Suchana, a large-scale development program to prevent chronic undernutrition in north-eastern Bangladesh. *BMC public health*, 20(1), 744.
30. Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M. F., Walker, N., Horton, S., Webb, P., Lartey, A., Black, R. E., & Lancet Nutrition Interventions Review Group, the Maternal and Child Nutrition Study Group (2013). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?. *Lancet (London, England)*, 382(9890), 452–477.
31. Janmohamed, A., Sohani, N., Lassi, Z. S., & Bhutta, Z. A. (2019). PROTOCOL: The effectiveness of community, financial, and technology platforms for delivering nutrition-specific interventions in low-and middle-income countries: A systematic review. *Campbell Systematic Reviews*, 15(3).
32. Sarwar, M. R. (2015). Bangladesh Health Service Delivery: innovative NGO and private sector partnerships. *IDS Bulletin*, 46(3), 17-28.
33. Meraj, S., & Siddiqui, A. A. (2021). Revisiting Public Health & Politics in Colonial India: A Scoping Historical and Literary Synopsis of The Bengal Famine of 1943 in Light of COVID-19. *Johns Hopkins University*, 2(1).
34. Sanghvi, T., Nguyen, P. H., Tharaney, M., Ghosh, S., Escobar-Alegria, J., Mahmud, Z., Walissa, T., Zafimanjaka, M., & Kim, S. (2022). Gaps in the implementation and uptake of maternal nutrition interventions in antenatal care services in Bangladesh, Burkina Faso, Ethiopia and India. *Maternal & child nutrition*, 18(2), e13293.
35. Saleem, A. F., Mahmud, S., Baig-Ansari, N., & Zaidi, A. K. (2014). Impact of maternal education about complementary feeding on their infants' nutritional outcomes in low- and middle-income households: a community-based randomized interventional study in Karachi, Pakistan. *Journal of health, population, and nutrition*, 32(4), 623–633.
36. Imdad, A., Yakoob, M. Y., & Bhutta, Z. A. (2011). Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries. *BMC public health*, 11(3), 1-14.
37. Panjwani, A., & Heidkamp, R. (2017). Complementary feeding interventions have a small but significant impact on linear and ponderal growth of children in low-and middle-income countries: a systematic review and meta-analysis. *The Journal of nutrition*, 147(11), 2169S-2178S.
38. 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., Maternal and Child Nutrition Study Group. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet*, 382, 427–451
39. Faruque, A. S., Ahmed, A. M., Ahmed, T., Islam, M. M., Hossain, M. I., Roy, S. K., Alam, N., Kabir, I., & Sack, D. A. (2008). Nutrition: basis for healthy children and mothers in Bangladesh. *Journal of health, population, and nutrition*, 26(3), 325–339.
40. Walton, L. M., & Brown, D. (2012). Cultural barriers to maternal health care in rural Bangladesh. *Journal of Health Ethics*, Fall.
41. Ramadan, M., Muthee, T. B., Okara, L., Feil, C., & Villar Uribe, M. (2023). Existing gaps and missed opportunities in delivering quality nutrition services in primary healthcare: a descriptive analysis of patient experience and provider competence in 11 low-income and middle-income countries. *BMJ open*, 13(2), e064819.
42. Kraef, C., Wood, B., von Philipsborn, P., Singh, S., Peterson, S. S., & Kallestrup, P. (2020). Primary health care and nutrition. *Bulletin of the World Health Organization*, 98(12), 886.
43. Hasan, A. M. R., Selim, M. A., Anne, F. I., Escobar-DeMarco, J., Ireen, S., Kappos, K., Ash, D., & Rasheed, S. (2023). Opportunities and challenges in delivering maternal and child nutrition services through public primary health care facilities in urban Bangladesh: a qualitative inquiry. *BMC health services research*, 23(1), 1172.
44. Meraj, S. (2024). Family, Society, and Government: Understanding Underlying Cultural, Historical, and Political Influences Perpetuating Child Abuse and Neglect Issues in China. *The Macksey Journal*, 4(1).
45. Saha, K. K., Billah, M., Menon, P., El Arifeen, S., & Mbuya, N. V. (2015). *Bangladesh National Nutrition Services: assessment of implementation status*. World Bank Publications.