EAS Journal of Nutrition and Food Sciences
Abbreviated Key Title: EAS J Nutr Food Sci
ISSN: 2663-1873 (Print) & ISSN: 2663-7308 (Online)
Published By East African Scholars Publisher, Kenya
Volume-7 | Issue-1 | Jan-Feb; 2025 | DOI: https://doi.org/10.36349/easjnfs.2025.v07i01.005

OPEN ACCESS

Review Article

Double Burden of Malnutrition: A Narrative Review of its Drivers and Mitigation Strategies in Urban Settings

Oladeji Oluwatoyin E[1], Aja-Nwachuku Adaora G[2], Ekeoha Cynthia E[3], Olaide Zainab[4], Benedict Daniel C.[2,5], Okoye Chinelo U[2*]

[1]Department of Nutrition and Dietetics, Federal University of Agriculture Abeokuta
[2]Department of Nutrition and Dietetics, University of Nigeria Nsukka
[3]Department of Nursing Sciences, University of Nigeria, Enugu Campus
[4]Department of Human Nutrition and Dietetics Department, University of Ibadan
[5]Cardiovascular Research Unit, University of Abuja

Article History
Received: 18.12.2024
Accepted: 24.01.2025
Published: 31.01.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** Double burden of malnutrition (DBM) is an emerging public health problem in urban settings where both undernutrition and obesity exist. This complex phenomenon is caused by socioeconomic disparities, urbanization, and dietary transitions, with women and children being proportionately affected. This study reviews the drivers of DBM and evaluates suitable mitigation strategies. ***Methods*:** A comprehensive review was performed using studies published between 2014 and 2024. Peer-reviewed articles examining the drivers, interventions, and outcomes of DBM within urban contexts were the target inclusion criteria. Data were extracted on location, target populations, methodologies, key drivers, interventions and outcomes which were then synthesized using thematic analysis. ***Results*:** Eighteen studies from Sub-Saharan Africa, Southeast Asia, and Latin America were included. Drivers known to be common among the reviewed studies include income inequality, poor dietary diversity, and cultural food practices that are further worsened by urbanization and sedentary lifestyles. By region, effective mitigation strategies included maternal nutrition literacy programs in Southeast Asia and Sub-Saharan Africa and taxation policies against unhealthy foods in Latin America. Gaps were identified in the areas of policy implementation and program scalability. ***Conclusion*:** Integrated, double-duty actions are needed to address the double burden of malnutrition in urban contexts. However, policy reform, community-based nutritional programs and educational initiatives targeted at vulnerable populations, are essential. Longitudinal and gender-specific research should be prioritized in assessing DBM's trajectory and informing future sustainable interventions. The findings from this study offer actionable insights for policymakers and public health practitioners working to eliminate DBM in urban settings.

Keyword: Double Burden of Malnutrition, Urban Malnutrition, Undernutrition, Obesity, Socio-Economic Disparities.

INTRODUCTION

The double burden of malnutrition (DBM) is a paradox; populations, households, and individuals are simultaneously undernourished and over-nourished. Driven by rapid urbanization, changing diets, and more sedentary lifestyles, it has now become an increasingly pressing issue in urban areas, making tackling malnutrition a complicated effort (Mazariegos *et al*., 2024). Urban areas in low- and middle-income countries (LMICs) experience high rates of stunting, wasting and micronutrient deficiencies in addition to a surge in rates of overweight and obesity (Alem *et al*., 2023). Urban contexts of DBM reflect inequalities deeply rooted in socio-economic, cultural and environmental factors. However, urbanization tends to improve access to inexpensive, calorie-dense but nutrient-poor foods while economic inequalities force marginalized populations into chronic undernutrition (Caleyachetty *et al*., 2023). In these circumstances, women and children are particularly exposed. As Pradeilles *et al*., (2023)

***Corresponding Author:** Okoye Chinelo U
Department of Nutrition and Dietetics, University of Nigeria Nsukka

underline, DBM encompasses many households affected by the coexistence of maternal overweight or obesity and child undernutrition, which represents a complex set of public health challenges. The global prevalence of DBM is alarming and uneven. For instance, in Latin America, over 40% of urban populations were found to be overweight or obese and stunting remains a persistent problem among children aged 0–4 years, primarily due to socio-economic differences (Mazariegos *et al*., 2024). In India and Peru's peri-urban areas, the urban poor face struggles with DBM, given factors like shortfalls in food diversity, low level of education, and socio-demographic barriers (Jasrotia *et al*., 2023; Pradeilles *et al*., 2023).

Diets and lifestyles have been transformed by urbanization, which has given rise to nutrition and health challenges. With rural-urban migration, there is more access to cheap and calorie-dense foods, which, by extension, pushes more people away from indigenous fiber-rich diets to foods packed full of fats, sugars, and salt (Charles, 2024; Okoye *et al*., 2024). A key example of this shift, also known as nutrition transition, is especially prevalent in low- and middle-income countries (LMICs) where rapid urbanization is exacerbating obesity and non-communicable disease rates while undernutrition continues (Shetty, 2013). The decline of physical activity in modern city life is a key problem caused by urbanization. Urban jobs that require long hours at desks, mechanized transportation systems and infrastructure make sedentary lifestyles the expected norm. This process is accelerated in the peri-urban areas of Bangalore, for example, where rising incomes result in enhanced consumption of energy-dense, processed foods (Brinkmann, 2022).

In urban areas, marginalized groups do not have the financial ability to purchase healthy foods that make up a multitude of diverse diets, and are therefore forced to buy cheaper, poorer quality food. Meanwhile, it is possible that wealthier urban populations can afford better food choices but are also at risk of over-nutrition based on poor dietary habits. Combining these two extremes of undernutrition and obesity constitutes the dual burden of malnutrition which is a layered public health problem, and through which strategies must be developed to work on both extremes simultaneously. There is strong evidence that DBM commonly affects the same populations, for example in urban poor settings stunted children and overweight adults coexist, but integrated solutions are limited (Kimani-Murage *et al*., 2015). Many current efforts overlook the common drivers of malnutrition, including poverty, food insecurity and inadequate education, and fail to take an integrated approach; instead, they focus on isolated solutions that do not have the focus to solve DBM (Guevara Romero *et al*., 2021). As a result, this study seeks to explore the drivers of DBM in urban areas and evaluate public health interventions to this dual challenge.

METHODOLOGY

Search Strategy

A comprehensive search strategy was used to identify relevant studies regarding the double burden of malnutrition (DBM) in urban settings. Academic databases including PubMed, Scopus, and Web of Science were searched to obtain a wide and varied pool of literature. The search terms used were "double burden," "urban malnutrition," "obesity," "undernutrition," and "public health interventions." All searches used Boolean operators (AND, OR) to get additional variations and synonyms for the terms. References for additional studies were identified through a manual screening of relevant articles that supplemented the initial search.

Selection Criteria

The review included studies that were published in peer-reviewed journals between 2014 and 2024 to reflect trends and interventions addressing DBM, studies that focused on urban settings, and that provided detailed insights into the drivers of DBM and interventions addressing the dual challenge.

Studies that focused solely on either undernutrition or obesity without exploring their coexistence, did not examine urban settings as the primary context of interest, were not published in peer-reviewed journals, and failed to present actionable findings relevant to the scope of the review were excluded.

Data Extraction

Key variables such as location, target population key drivers, interventions, and outcomes were systematically extracted to ensure consistency and make it possible to compare across the selected studies. Thematic analysis was used to synthesize the extracted data to identify patterns, evaluate intervention effectiveness, and offer actionable recommendations. This approach provided a broad coverage of DBM in urban settings and identified gaps in current approaches and opportunities for integrated public health interventions.

RESULTS AND DISCUSSION

Overview of Included Studies

Eighteen studies conducted in various geographical settings were included, demonstrating the global relevance of DBM. These include studies of urban slums, peri-urban areas and metropolitan urban areas in Sub-Saharan Africa, Southeast Asia and Latin America. Adolescents, women, mothers and children are key populations that are vulnerable to DBM. Kimani-Murage *et al*., (2015) studied household-level DBM in Nairobi's urban slums and found that poverty and poor dietary diversity were key factors. Pradeilles *et al*., (2023) also focused on peri-urban Peru and how maternal education and income impact child nutrition outcomes. Several

studies explored how the double burden of malnutrition is aggravated through urbanization. Building on existing literature, Barth-Jaeggi *et al*., (2023) studied nutrition transitions in secondary cities in Kenya, Rwanda and Bangladesh, and their link to urban migration and shifts in dietary patterns and DBM prevalence. Insights into urbanicity gradients were provided by Jones *et al*., (2016) who described food access disparities amongst rural and urban populations within Sub-Saharan Africa. Interventions across the studies ranged from maternal education to community-based health initiatives to dietary behavioural modifications. Mahmudiono *et al*., (2018) conducted an evaluation of maternal nutrition literacy programmes in Surabaya, Indonesia, with increments in dietary diversity. Wanjohi *et al*., (2024) evaluated school-based dietary interventions aimed at decreasing malnutrition rates among adolescents in Kenya's urban slums, revealing gender-specific differences in malnutrition patterns. Diverse methodologies were used in the studies including cross sectional surveys, anthropometric measurement and food security assessments. Majority of the studies identified socioeconomic disparities, poor dietary diversity and urban dietary transitions as critical drivers of DBM, emphasizing the need for targeted public health interventions.

Table 1: Characteristics of Included Studies

Author & year	Kimani-Murage *et al*., (2015)	Jones *et al*., (2016)	Quinteros-Reyes *et al*., (2024)	Pradeilles *et al*., (2023)
Study location	Nairobi, Kenya	Sub-Saharan Africa	Peru	Peru
Urban Setting Description	Urban slums	Urban-rural gradient comparisons	Peri-urban communities	Peri-urban areas
Target Population	Mothers and children	Households and individuals	General population	Mothers, infants, young children
Sample Size	399 households	4,500 households	Not specified	351 mother-child dyads
Measurement Tools	Anthropometric measures	Anthropometric data, dietary surveys	System dynamics simulations	Dietary recall, anthropometric measures
Key Drivers	Poverty, poor dietary diversity	Socioeconomic disparities, urbanicity gradient	Food system inefficiencies, low dietary diversity	Low income, poor maternal education
Interventions	Community nutrition programs	None reported	Community-based system dynamics modeling	Nutrition education for mothers
Regional Context	Reliance on low-cost, high-calorie diets	Urbanicity impacts food access and quality	Limited access to diverse, fresh foods	Women primary caregivers with limited resources
Gender Analysis	Higher undernutrition in children, overweight in mothers	Women in urban areas more overweight; rural areas face more undernutrition	Gendered food access dynamics observed	Women more prone to obesity; children undernourished
Outcomes	Evidence of household-level DBM; drivers linked to socioeconomic status and poor nutrition education	Urbanicity gradients associated with DBM at household and individual levels	Identified key drivers of DBM; proposed food system interventions	DBM linked to household income and maternal knowledge gaps

Biswas *et al*., (2021)	Zhou *et al*., (2020)	Biswas *et al*., (2022)	Barth-Jaeggi *et al*., (2023)	Getacher *et al*., (2023)	Wanjohi *et al*., (2024)
South and Southeast Asia	China	Southeast Asia	Bangladesh	Ethiopia	Kenya
Urban households	Urban and rural areas	Urban and peri-urban areas	Secondary cities	Urban-regiopolitan area (Debre Berhan)	Urban slums
General households	School-aged children, adolescents	Women	Women, children	Adolescents	Adolescents
7,000 households	4,000 participants	5,000 women	Not specified	1,200 adolescents	422 adolescents
Household surveys, anthropometric measures	Anthropometric measures	Anthropometric measures	Anthropometric measures, dietary assessments	Multinomial regression analysis	Food frequency questionnaires, BMI
Low income, dietary imbalance	Poor diet, limited access to fresh produce	Income inequality, limited dietary diversity	Urbanization, nutrition transitions	Inadequate dietary diversity, socioeconomic factors	Poor diet, high fast-food consumption
None reported	Nutrition education campaigns	None reported	Community-based awareness campaigns	Community-level health interventions	School-based dietary interventions
Regional food scarcity influencing diets	Urban diets rely on fast food and sugary drinks	Cultural norms influencing women’ s nutrition	Urban-rural migration influencing dietary practices	Low vegetable intake, reliance on starchy staples	Preference for cheap, calorie-dense foods
Not gender-specific	Boys more overweight; girls more undernourished	Women face higher obesity rates; men less affected	Varied patterns of DBM based on region and gender	Boys more overweight, girls more undernourished	Boys showed higher obesity rates, girls more undernourished
Patterns of DBM linked to household-level socioeconomic disparities	Growth profile disparities linked to dietary patterns	Socioeconomic inequalities exacerbate DBM	Nutrition transition contributes to DBM in secondary cities	Socioeconomic disparities influence DBM prevalence	Dietary behaviors linked to socioeconomic constraints

Mahmudiono *et al*., (2018)	Maehara *et al*., (2019)	Kushitor *et al*., (2020)	Christian & Dake (2022)	Das *et al*., (2019)	Yigezu *et al*., (2024)
Surabay, Indonesia	Indonesia	Ghana	Sub-Saharan Africa	Bangladesh	Ethiopia
Urban metropolitan area	Urban areas (Jakarta, Bandung)	Urban and peri-urban areas	Urban and rural households	Urban and peri-urban areas	Urban households
Households with children	Adolescent girls and boys	Women	Households	Households	Mothers and children
350 households	600 adolescents	3,500 women	6,000 households	1,200 households	400 households
Household surveys, food security scales	BMI-for-age, diet quality index	Anthropometric measures	Household surveys, anthropometric measures	Anthropometric measures, food security scales	Anthropometric measures, household surveys
Nutrition literacy, dietary diversity	Socioeconomic status, diet quality	Food insecurity, low protein intake	Socioeconomic disparities, low literacy	Low education, poor dietary diversity	Poverty, food insecurity
Maternal nutrition literacy programs	Community-based nutrition education	None reported	None reported	Community-based nutrition education	None reported
High reliance on rice as a staple, limited protein sources	Dietary patterns influenced by fast food and low vegetable intake	Reliance on starchy staples	Regional disparities in education and income	Low dietary diversity, reliance on rice	Traditional diets low in protein
Mothers' education levels significantly impacted outcomes	Boys showed higher obesity rates; girls faced more undernutrition	Women in urban settings more obese than rural counterparts	Women more affected by obesity, children by undernutrition	Women faced more obesity; children more stunting	Higher undernutrition in children, overweight in mothers
Improved dietary diversity and food security in intervention groups	Patterns of DBM identified; socio-economic factors linked to malnutrition risk	Food insecurity and dietary patterns strongly associated with DBM	DBM linked to income inequality and literacy	Sociodemographic factors strongly linked to DBM prevalence	Household-level DBM linked to poverty and food insecurity

Wariri *et al*., (2020)	Nigeria	Northern and Southern urban cities	Adolescents	500 adolescents	Anthropometric measures	Poverty, poor dietary diversity	None reported	Regional economic disparities	Boys were more overweight; girls faced higher undernutrition	Urban economic inequalities exacerbate DBM trends
Meah *et al*., (2021)	Kenya	Urban and rural areas	Under-5 children	900 children	Anthropometric measures	Poor diet, low household income	None reported	Rural diets rely on staples, urban diets on processed foods	Boys faced higher obesity rates, girls more undernutrition	Urban-rural food patterns strongly associated with DBM

Comparative Analysis of Double Burden of Malnutrition across Regions

Double burden of malnutrition (DBM) has distinct and overlapping patterns in different regions attributable to socioeconomic, cultural and environmental contexts. The subtleties of DBM, and the comparison between Sub-Saharan Africa and Southeast Asia, show disparities as well as commonalities. DBM is, in sub-Saharan Africa, a result of pronounced income inequality and food insecurity, mostly directed towards urban slums and peri-urban areas. Other studies done in Kenya and Ethiopia have indicated that urbanization magnifies food access disparities with low-income households consuming mainly starchy staples and processed foods because they are budget friendly while rich urban populations have increased obesity rates due to excess consumption of highly caloric diets (Kimani-Murage *et al*., 2015; Getacher *et al*., 2023). Within cultural practices like unequal distribution of food in households, women and children are left more likely to be malnourished (Okoye *et al*., 2024). Similar to Southeast Asia, socioeconomic disparities drive DBM but additional factors of rapid urbanization and dietary transition impact DBM as well. Studies from Bangladesh and Indonesia show a pronounced reliance on calorie-dense, nutrient-poor processed foods in the context of urban growth, and changing food systems (Das *et al*., 2019; Maehara *et al*., 2019). In contrast to Sub-Saharan Africa where undernutrition is more evident, Southeast Asia exhibits a relatively high prevalence of overweight and obesity in urban women with low physical activity and prefer high-status foods such as sweet beverages and snacks (Biswas *et al*., 2022; Mahmudiono *et al*., 2018). While there are regional differences, both regions face common challenges in tackling DBM such as inadequate nutrition education, limited access to diverse and low-cost diets and weak nutrition-sensitive policy implementation. However, community-based interventions like maternal literacy and school feeding programs have been more successful in Southeast Asia, and they may offer models for Sub-Saharan Africa (Mahmudiono *et al*., 2018).

While the double burden of malnutrition is driven differently across Latin America, Europe, and North America than in African and Asian regions, patterns of urbanization and socioeconomic disparities appear similar. DBM is strongly associated with urbanization and dietary change in Latin America, where Peru and Mexico have reported high levels of obesity, but still relatively high levels of undernutrition. Given limited access to fresh and diverse foods in urban poor communities, ultra-processed foods are the major food in the diet, contributing to under-nutrition and obesity (Popkin *et al*., 2020). Peru (Quinteros-Reyes *et al*., 2024) is an example of a Latin American country benefiting from successful interventions such as community-based awareness programs and food systems modelling in the fight against malnutrition. The trends observed in low- and middle-income countries are repeated in low-income urban populations, through affordability-related reliance on calorie-dense foods (Menon & Peñalvo, 2019). However, in industry areas where there is public health infrastructure and numerous awareness campaigns, the issue of extreme under-nutrition does not arise, with more attention given to lowering levels of obesity and improving diet quality (Kosaka & Umezaki, 2017). Common across regions are the influence of income inequality and the contribution of processed foods to increasing DBM. African and Asian regions focus on community-based nutrition education while developed nations focus on policies like taxing unhealthy foods and subsidizing healthy foods.

Policy and Program Implications

Addressing the double burden of malnutrition calls for integrated, context-specific public health policies to tackle the dual challenges of undernutrition and obesity. Evidence shows that those actions aimed at reducing malnutrition in the urban context by combining urban planning and nutrition-sensitive agricultural policies to improve access to affordable, nutrient-rich food, can indeed reduce both extremes of malnutrition. Regions such as Latin America and Southeast Asia have found policies of taxing unhealthy food and subsidizing fruits and vegetables among other nutritious foods, to be effective. Community-level programs such as nutrition

education, specifically for women and caregivers are crucial. Studies from Sub-Saharan Africa and Indonesia have shown that enhancing maternal nutrition literacy leads to better dietary diversity and a lower prevalence of DBM in children. Urban food systems reform should be a priority for governments, who should reward creating food environments that limit ultra-processed foods and promote local, culturally relevant diets. Collaboration among sectors including health, agriculture and education is important. Finally, policy should centre on the targeting of interventions in marginalized urban populations to reduce socio-economic inequalities and guarantee more equitable access to resources.

Research Gaps and Future Directions

Gaps in current studies are identified as limiting comprehensive DBM interventions. Empirically, many studies used cross-sectional data for studying DBM but rarely explored the change's long-term trajectories and causal pathways. This brings into focus the need for longitudinal research to investigate how DBM evolves with time, especially in the context of emerging economies where urbanization is at high rates. There is also little gender-specific data though there are indications that women and children bear most of the DBM burden. Future studies should explore how gendered dynamics play out in the allocation of food and decisions about health resources or access, to help design pre-emptive tailored interventions. There is a geographical bias towards low- and middle-income countries compared to under-studied regions with obesity and micronutrient deficiencies in developed countries. Broader lessons can be realized through comparative analyses in different parts of the world, especially on urban food systems. In addition, research which includes socio-cultural factors such as dietary norms and household roles is needed for the development of culturally adapted solutions. Advances in data collection and analysis like the integration of big data and geospatial mapping will reveal hidden patterns in DBM distribution and drivers. Another area where future research should focus is evaluating the effectiveness of "double duty" policies and programs as a means of increasing the evidence with which to scale interventions worldwide. Addressing these gaps will improve the development of equitable and sustainable strategies to combat DBM.

CONCLUSION

The double burden of malnutrition (DBM) is a serious public health challenge in urban areas, associated with socio-economic disparities, urbanization, and dietary transition. The findings of this study highlight a need for integrated, context-specific interventions, including community-based programs, policy reform, and nutrition education aimed at reducing both undernutrition and obesity. Sustainable, equitable strategies for DBM mitigation worldwide require addressing research gaps, especially through longitudinal and gender-specific studies.

Author Contribution

Conceptualization: Oladeji O.E. and Okoye C.U.
Writing – review and editing: Oladeji O.E., Aja-Nwachuku A.G., Ekeoha C.E., Olaide Z., Chukwu B.D., Okoye C.U.
Data Extraction: Oladeji O.E. and Okoye C.U.
Writing – final draft: Oladeji O.E., Aja-Nwachuku A.G., Ekeoha C.E., Olaide Z., Chukwu B.D., Okoye C.U.

Acknowledgement: None

Conflict of Interest: The authors declare that there is no conflict of interest

REFERENCES

- Barth-Jaeggi, T., Speich, C., Havugimana, C., Bayisenge, F., Kimenju, S., Omondi, W., & Prytherch, H. (2023). Nutrition transition, double burden of malnutrition, and urbanization patterns in secondary cities of Bangladesh, Kenya, and Rwanda. *BMC Nutrition*, *9*(1), 125.
- Biswas, T., Townsend, N., Magalhaes, R. S., Hasan, M., & Mamun, A. (2021). Patterns and determinants of the double burden of malnutrition at the household level in South and Southeast Asia. *European Journal of Clinical Nutrition*, *75*(2), 385–391.
- Biswas, T., Townsend, N., Magalhaes, R., Hasan, M. M., & Al Mamun, A. (2022). Geographical and socioeconomic inequalities in the double burden of malnutrition among women in Southeast Asia: A population-based study. *The Lancet Regional Health-Southeast Asia*, *1*.
- Caleyachetty, R., Kumar, N., Bekele, H., & Manaseki-Holland, S. (2023). Socioeconomic and urban-rural inequalities in the population-level double burden of child malnutrition in the East and Southern African Region. *PLOS Global Public Health*, *3*(4), e0000397. https://doi.org/10.1371/journal.pgph.0000397
- Charles, E. C. (2024). Addressing Malnutrition in Urban and Rural Settings: Comparative Challenges and Solutions. NEWPORT INTERNATIONAL JOURNAL OF PUBLIC HEALTH AND PHARMACY, 5(2), 66-69. https://doi.org/10.59298/NIJPP/2024/52396669
- Christian, A. K., & Dake, F. A. (2022). Profiling household double and triple burden of malnutrition in sub-Saharan Africa: Prevalence and influencing household factors. *Public Health Nutrition*, *25*(6), 1563–1576.
- Das, S., Fahim, S. M., Islam, M. S., Biswas, T., Mahfuz, M., & Ahmed, T. (2019). Prevalence and sociodemographic determinants of household-level double burden of malnutrition in Bangladesh. *Public Health Nutrition*, *22*(8), 1425–1432.

- Getacher, L., Ademe, B. W., & Belachew, T. (2023). Double burden of malnutrition and its associated factors among adolescents in Debre Berhan Regiopolitan city, Ethiopia: A multinomial regression model analysis. *Frontiers in Nutrition, 10,* 1187875.
- Guevara-Romero, E., Flórez-García, V., Egede, L. E., & Yan, A. F. (2021). Factors associated with the double burden of malnutrition at the household level: A scoping review. *Critical Reviews in Food Science and Nutrition*, *1*(12), 1–12. https://doi.org/10.1080/10408398.2021.1908954
- Jasrotia, A., Saxena, V., & Bahrupi, Y. (2023). Prevalence of double burden of malnutrition among young children in Rishikesh, Uttarakhand, India: A cross-sectional study. *Journal of Clinical and Diagnostic Research*. https://doi.org/10.7860/jcdr/2023/61505.18261
- Jones, A. D., Acharya, Y., & Galway, L. P. (2016). Urbanicity gradients are associated with the household- and individual-level double burden of malnutrition in sub-Saharan Africa. *The Journal of Nutrition, 146*(6), 1257–1267.
- Katiganere Purushotham, A. (2021). *Nutrition transition in the Indian rural-urban interface* (Doctoral dissertation, Dissertation, Göttingen, Georg-August Universität, 2021).
- Kimani-Murage, E. W., Muthuri, S. K., Oti, S., Mutua, M. K., van de Vijver, S., & Kyobutungi, C. (2015). Evidence of a double burden of malnutrition in urban poor settings in Nairobi, Kenya. *PLOS ONE, 10*(6), e0129943. https://doi.org/10.1371/journal.pone.0129943
- Kosaka, S., & Umezaki, M. (2017). A systematic review of the prevalence and predictors of the double burden of malnutrition within households. *British Journal of Nutrition*, 117(8), 1118–1127. https://doi.org/10.1017/S0007114517000812
- Kushitor, S. B., Owusu, L., & Kushitor, M. K. (2020). The prevalence and correlates of the double burden of malnutrition among women in Ghana. *PLOS ONE, 15*(12), e0244362.
- Maehara, M., Rah, J. H., Roshita, A., Suryantan, J., Rachmadewi, A., & Izwardy, D. (2019). Patterns and risk factors of double burden of malnutrition among adolescent girls and boys in Indonesia. *PLOS ONE, 14*(8), e0221273.
- Mahmudiono, T., Nindya, T. S., Andrias, D. R., Megatsari, H., Rachmah, Q., & Rosenkranz, R. R. (2018). Comparison of maternal nutrition literacy, dietary diversity, and food security among households with and without double burden of malnutrition in Surabaya, Indonesia. *PLOS ONE.*
- Mazariegos, M., Sánchez, B. N., Ortigoza, A., Moore, K., Kroker-Lobos, M. F., Ramírez-Zea, M., Sarmiento, O. L., Miranda, J. J., & Pérez-Ferrer, C. (2024). Double burden of malnutrition in 115 Latin American cities: An ecological analysis. *Reproductive, Female and Child Health, 3*(3). https://doi.org/10.1002/rfc2.103
- Meah, D. O., Majoge, P. O., & Luta, V. M. (2021). Prevalence and drivers of individual-level double burden of malnutrition among under-5 children in Kenya.
- Menon, S., & Peñalvo, J. L. (2019). Actions targeting the double burden of malnutrition: A scoping review. *Nutrients*, *12*(1), 81.
- Okoye C. U., Jonathan K. O., Oluwatoyin E. O., Bamidele J. A., & Caleb K. O. (2024). Long-Term Impacts of Home Gardening on Dietary Diversity and Household Food Security in Low-Income Countries: A Systematic Review. *SciBase Hum Nut and Food Sci, 1*(2), 1006. https://www.doi.org/10.52768/SciBaseHumNutrFoodSci/1006
- Okoye, Chinelo U., Chiamaka O. Enechi, Ibrahim A. Olanipekun, Uchechi N. Obiefule, Gideon K. Asumadu-Boateng, Sylvia C. Emejuru, Ruth K. Onwe, Joy A. Ezehmalu, and Blessing T. Ayanwunmi. (2024). Impact of Food Systems Transformation on Dietary Patterns and Public Health in Africa: A Mini Review. *Asian Journal of Food Research and Nutrition*, 3(3), 747-56. https://journalajfrn.com/index.php/AJFRN/article/view/171.
- Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. *The Lancet*, *395*(10217), 65-74.
- Pradeilles, R., Landais, E., Pareja, R. G., Eymard-Duvernay, S., Markey, O., Holdsworth, M., Rousham, E. K., & Creed-Kanashiro, H. M. (2023). Exploring the magnitude and drivers of the double burden of malnutrition at maternal and dyad levels in peri-urban Peru: A cross-sectional study of low-income mothers, infants, and young children. *Maternal and Child Nutrition*, *19*(4), e13549. https://doi.org/10.1111/mcn.13549
- Quinteros-Reyes, C., Seferidi, P., & Guzman-Abello, L. (2024). Mapping food system drivers of the double burden of malnutrition using community-based system dynamics: A case study in Peru. *BMC Global Public Health*, *2*, 15. https://doi.org/10.1186/s44263-024-00045-6
- Shetty, P. (2013). Nutrition transition and its health outcomes. *Indian Journal of Pediatrics*, *80*(1), 21–27. https://doi.org/10.1007/s12098-013-0971-5
- Wanjohi, M. N., Kimani-Murage, E. W., & Asiki, G. (2024). Adolescents' dietary patterns, their drivers, and association with double burden of malnutrition in adolescents: A cross-sectional study in Kenya's urban slums. *Journal of Health, Population, and Nutrition*, *43*, 181. https://doi.org/10.1186/s41043-024-00664-7
- Wariri, O., Akhimienho, K. I., Alhassan, J. A. K., Jalo, I., Oloyede, I. P., Nyong, E. E., & Bode-Thomas, F. (2020). Population and individual-level

double burden of malnutrition among adolescents in two emerging cities in Northern and Southern Nigeria: A comparative cross-sectional study. *Annals of Global Health, 86*(1).

- Yigezu, M., Oumer, A., Damtew, B., Birhanu, D., Getaye Workie, S., Hamza, A., & Kebede, N. (2024). The dual burden of malnutrition and its associated factors among mother-child pairs at the household level in Ethiopia: An urgent public health issue demanding sector-wide collaboration. *PLOS ONE, 19*(11), e0307175.
- Zeleke, A., Yeshaw, Y., Liyew, A. M., Tessema, Z. T., Worku, M. G., Tesema, G. A., Alamneh, T. S., Teshale, A. B., Chilot, D., & Ayalew, H. (2023). Double burden of malnutrition and its associated factors among women in low- and middle-income countries: Findings from 52 nationally representative data. *BMC Public Health, 23*. https://doi.org/10.1186/s12889-023-16045-4
- Zhou, S., Ye, B., Fu, P., Li, S., Yuan, P., Yang, L., & Yan, A. (2020). Double burden of malnutrition: Examining the growth profile and coexistence of undernutrition, overweight, and obesity among school-aged children and adolescents in urban and rural counties in Henan Province, China. *Journal of Obesity, 2020*(1), 2962138.

Cite This Article: Oladeji Oluwatoyin E, Aja-Nwachuku Adaora G, Ekeoha Cynthia E, Olaide Zainab, Benedict Daniel C., Okoye Chinelo U (2025). Double Burden of Malnutrition: A Narrative Review of its Drivers and Mitigation Strategies in Urban Settings. *EAS J Nutr Food Sci, 7*(1), 39-47.