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# Nutrition security and traditional food markets in Africa: gender insights

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Malnutrition is a major global challenge. Multiple forms, from underweight to obesity, exist, and several forms coexist within communities and households. Traditional food markets, also known as wet, local, or informal markets, are widespread in sub-Saharan Africa (SSA) and are a key place where people buy and sell food and socially interact, especially those vulnerable to malnutrition. As such they are vital to food and nutrition security. While it is recognized that gender is an important consideration in food and nutrition security, very little has been published in peer reviewed journals, with respect to gender and traditional food markets in SSA. This mini review aims to explore the nexus role of traditional food markets and gender in food and nutrition security. This study presents a narrative literature review, informed by literature identified in a systematic manner. Four databases were searched for key terms, including nutrition, different forms of malnutrition, gender, traditional food markets, and vendors. The papers provided insight into two main topics pertaining to the role of traditional food market practices, gender, and food and nutrition security. While few papers were identified in this mini review, they illustrated insightful nuances into traditional food markets, gender, and food and nutrition security. There is a need for explicitly framed gender studies that can better inform the limited existing knowledge of the experiences of gender and nutritional security of women and men in traditional food markets in SSA.

## KEYWORDS

food markets, traditional, food security, nutrition, gender, Africa

## 1 Introduction

Malnutrition is a major global challenge, prevalent in various forms, several of which often coexist within communities and households, such as undernutrition, micronutrient deficiency, overweight and/or obesity (World Health Organization, 2019; Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Food security defined broadly covers calorific sufficiency of food at all times with attention to cultural preferences (Food and Agriculture Organization of the United Nations, 1996); the more recent preference for the concept 'food and nutrition security' further covers the routine and dietary quality of food consumption, comprising a diversity of nutrients necessary for health and well-being (Ingram, 2020). The State of Food Security and Nutrition in the World (SOFI) 2023 report found that in 2022, the prevalence of undernourishment in the population of Africa was 19.7%, while the prevalence of moderate or severe food insecurity in sub-Saharan Africa (SSA) was found to range from a low of 25.9% in Southern Africa to 78.4% in Middle

Africa in 2022 (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Food and nutrition insecurity poses a fundamental barrier to people's survival, prosperity and more widely the sustainable 'co-beneficial' relationship between people and planet (World Health Organization, 2019). Despite some progress, globally hunger continues to rise, with food insecurity and malnutrition becoming the "new normal" (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Efforts to achieve Sustainable Development Goal 2: Zero Hunger (in all forms) by 2030 are thwarted by the scale and complexity of this challenge (United Nations System Standing Committee on Nutrition, 2016; United Nations Department of Economic and Social Affairs, 2022). This is amplified by rapid urbanization as well as the frequency and magnitude of multiple food system shocks and disruptions like climate change, economic instability, and conflict (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023).

Communities in low-and middle-income countries (LMIC's) where poverty is persistent are especially vulnerable to food and nutrition insecurity. The SOFI 2023 report found the prevalence of moderate or severe food insecurity in the total population for low-income countries to be 65.7% between 2020 and 2022, and 39.6% in lower-middle income countries between 2020 and 2022, while being reported as 7.6% in high income countries between 2020 and 2022 (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). The increasing influence of urbanization across the urban-rural continuum is further shifting the characteristics of food supply, how people access food and what they eat towards less healthy options (Hannah et al., 2022; Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). This is particularly evident in SSA and Southern Asia where the rate of urbanization and cost of a healthy diet are highest, and where low-income households are more exposed to unemployment, poor health and dependency on food purchasing, including urban residents, many of whom do not grow their own food (Davies et al., 2021; Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Coupled with Sustainable Development Goal 2 is Goal 1: 'No Poverty' which is also the fundamental premise of the 2030 Agendas "leaving no-one behind," the enormity of the challenge is illuminated (United Nations General Assembly, 2015; United Nations Human Settlements Programme, 2022). In many SSA countries attainment of 'No Poverty' remains off track, with nearly 30% of the urban population experiencing the highest global level of multidimensional poverty (United Nations Human Settlements Programme, 2022).

Traditional food markets are widespread in SSA and vital to communities' food and nutrition security. They are key places where people living on low incomes and/or in poverty routinely sell and buy

foods for their consumption and socially come together around food (Crush et al., 2012). For example, 70% of people from cities within the Southern African Development Community (SADC) rely on traditional markets to obtain their food (Frayne et al., 2010). These markets are an integral and informal part of the wider food systems including the rural-urban continuum and are often dynamic 'social and sustenance' places and distribution nodes in the urban food environment (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Whilst a universal definition of the food environment is lacking, Turner et al. define it as "the interface that mediates people's food acquisition and consumption within the wider food system, encompassing external dimensions such as the availability, prices, vendor and product properties, and promotional information; and personal dimensions such as the accessibility, affordability, convenience and desirability of food sources and products" (Turner et al., 2018). More recently Downs et al. have expanded the concept, with a socio-ecological frame, wherein the food environment is a "critical place in the food system to implement interventions to support sustainable diets and address the global syndemic of obesity, undernutrition, and climate change, because it contains the total scope of options within which consumers make decisions about which foods to acquire and consume" (Downs et al., 2020). In this mini-review paper, the term 'traditional food markets' encompasses a diversity of 'markets' from those that are enclosed with some infrastructure and roofs to open air markets, kiosks and street vendors, and are further defined by a range of government and non-government ownership and/or regulatory arrangements pertaining to the markets. These markets are also referred to as wet, local, retail or informal (food) markets (Downs et al., 2020; Laar et al., 2022). The extent to which these markets have basic services, like water, sanitation and energy and key infrastructure, like cold rooms and dry storage, further influences food safety, shelf life and dietary quality of foods sold (Smit, 2016).

Research into LMICs' traditional food markets, nutrition and gender, as part of SSA food environments, is scarce (Turner et al., 2018). Previous research relating to nutrition and traditional food markets has tended to focus more on an agricultural perspective. For example, how agriculture and livestock practices are associated with market access and income and in turn how this is linked to food and nutrition insecurity (Gebissa and Geremew, 2022; Sibhatu et al., 2022). Affordability and access to foods in markets and income have been found to be associated with food security (Keding et al., 2017; McCordic et al., 2019; Middendorf et al., 2021). Affordability (access) in traditional food markets is reported as especially significant in urban environments, where increased food prices and low incomes are often not compensated by urban agriculture or livestock holdings (McCordic et al., 2019; Chege et al., 2022).

Some research explored gender and food and nutrition security but very little has been published with respect to gender and traditional food markets in SSA (Skinner, 2016). While the influence of gender on the wider informal food economy is known to be important, there is a lack of extensive and explicit knowledge thereof (Skinner, 2016). Gender in this mini-review refers to the description of "men" and "women" as constructed of socially learned practices and expectations associated with males and females, and their respective roles (Aberman et al., 2022). Notably, the papers

identified in this literature review do not explicitly define gender and use terms like gender, men, and women interchangeably. When referring to gender in the findings and discussion, we have remained consistent with the terminology as used in each particular paper whilst remaining directed by the aforementioned definition that guides this review paper. Women play several key roles in agriculture and food environments, from producers and market vendors to food preparation (Keding et al., 2017; Aberman et al., 2022; Giner et al., 2022; Sibhatu et al., 2022). These roles can help women and their households improve their food and nutrition security, but women also face barriers such as managing time constraints linked to multiple roles from producer and/or market vendor and household caretaker or expected roles in procuring food (Keding et al., 2017; Aberman et al., 2022; Chege et al., 2022). Interestingly, the literature on gender tends to focus on the barriers faced by women. Importantly, men still experience the influence of gender roles in their involvement in food and nutrition security and have a key role to play in gender equality and mainstreaming (Greig and Flood, 2020). For example, men were reported to not have the responsibility of food preparation which adds more burden to women (Sibhatu et al., 2022). Increasingly the influences of gender on food security are acknowledged, but this has not led to significant shifts in food and nutrition security paradigms to include an intersectional gender perspective (Visser and Wangu, 2021). The literature is also scarce on the specific influences of gender and traditional food markets on food and nutrition security in SSA. Some studies have demonstrated the relevance of the gender of the head of a household in nutrition and food security in respect of decision making around access to resources and labor (Ochieng et al., 2017). Differences are also seen between males and females, regarding income generation, market access, and finances due to different roles in markets and duties outside of food production and acquisition (Gebissa and Geremew, 2022; Milner et al., 2022; Sibhatu et al., 2022). Markets can provide space for women to be involved in food purchasing and income generation, but this research is still limited (Davies et al., 2022).

A gap evidently exists in understanding the nexus where literature about traditional food markets, gender and food and nutrition security overlap. This mini review paper further explores this nexus by examining the literature in the context of SSA. The aim is to bring together an interdisciplinary array of knowledge of these markets, highlighting insights into gender which can inform the design of food and nutrition security interventions, in the informal food sector, with the potential to reshape community, market and personal practices towards better inclusion and sustainability.

## 2 Materials and methods

This study presents a narrative literature review informed by a systematic identification of the literature. The intention is to critically describe and discuss the literature, in the manner outlined by Ferrari (2015). Search criteria supported the effectiveness and efficiency of searches and reduced selection bias. Notably, search strings took into consideration the range of market terms and what defines traditional food markets as discussed in the introduction.

A systematic search of the literature was conducted between May and July 2023 in the databases of PubMed, Embase, Web of Science, and ScienceDirect. Papers published in English between 2017 and

2022 were included. Search terms and an adapted PRISMA diagram illustrating the screening of papers can be found in the [Supplementary material](#). In part due to study time constraints but more because of the rapid growth and development of the literature in the field of food systems and sustainability, following the launch of the Sustainable Development Goals in late 2015, the search had a recent 5-year window. Language is recognized as a constraint, especially with the recent growth of literature from institutions in SSA. However, much of this remains peer reviewed and published in English.

Inclusion criteria: peer-reviewed journal publications; mention of gender, markets, and a nutrition-related outcome; presenting or describing empirical results; research having been conducted in SSA. The World Bank regional designation of SSA was used. Papers focused on food production and sale in markets were only included if a conclusion was made relating to the impact of sales on purchasing ability (access) for different foods.

Exclusion criteria: South Africa was excluded as a SSA country in this study, primarily due to its more complex intersect of formal and informal food markets as well as the volume of evidence which can overwhelm that of less well researched SSA countries which sub-regionally have higher proportions of moderate and severe food insecurity (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization, 2023). Papers focusing specifically on child nutrition were excluded due to the specificity of childhood nutrition and the different role they may or may not play in market participation.

The first round of screening consisted of creating a list of selected papers from each database and screening them for the inclusion criteria based on title and abstract. Round two involved the removal of duplicates and papers that use the same datasets. A full-text analysis to screen out papers that did not fulfill the inclusion criteria in the third round.

## 3 Results

Following the screening process, where initially 279 papers were identified, a total of six papers remained for analysis (See [Supplementary Figure S1](#)). The details of these six papers are provided in [Table 1](#), for example, country or region of study, method, type of market/s. The narrative discussion of the results is structured around three themes that emerged from the critical review of the papers, namely market practices, traditional gender roles, and household practices. The review was informed by the research interest in the nexus where traditional food markets, gender and food and nutrition security meet or overlap.

### 3.1 Market practices, traditional gender roles, and nutrition

Market practices such as purchasing patterns regarding spending and food choices differed between genders. Women hold an important place in traditional food markets as both consumers and producers. They have various and sometimes simultaneous roles within the market, either as vendors (also referred to as sellers or traders) and/or

TABLE 1 Descriptive overview of six identified papers.

Title	Authors	Country/region	Type of study	Methodology	Types of markets	Food type
COVID-19 challenges to sustainable food production and consumption: Future lessons for food systems in Eastern and Southern Africa from a gender lens	E.B. Nchanji, C.K. Lutomia	Burundi, the Democratic Republic of Congo (DRC), Ethiopia, Kenya, Tanzania, Uganda, Malawi, Mozambique, Zambia, Zimbabwe	Case study	Quantitative (questionnaire) <i>n</i> = 926	Informal markets, informal fresh markets	Beans, (seeds)
Minimum dietary diversity among women of reproductive age in urban Burkina Faso	E. Custodio, F. Kayikatiere, S. Fortin, A.C. Thomas, Y. Kameli, T. Nkunuzimana, B. Ndiaye, Y. Martin-Prevel	Burkina Faso	Case study	Interviews ( <i>n</i> = 12,754)	Market, excluding street vendor, small shops, house to house sellers, and others	N/A
Women and men farmer perceptions of economic and health benefits of orange flesh sweet potato (OFSP) in Phalombe and Chikwawa districts in Malawi	N.N. Mudege, S. Mayanja, T. Muzhingi	Malawi	Case study	Focus group discussions (9 all men, 8 all women), <i>n</i> = 17, 10 per group 178 total, 2 more male extension worker groups – 1 with 5 men and 1 with 3, 16 decentralized vine multipliers in depth interviews	Markets, institutional markets, vine markets	Orange flesh sweet potatoes, vines, roots
Community perspectives on food security and dietary diversity among rural smallholder farmers: A qualitative study in central Uganda	D. Nabuuma, B. Ekesa, M. Faber, X. Mbhenyane	Uganda	Case study	28 participants, 8 focus groups, 4 with men 4 with women	N/A	N/A
Trading Fast and Slow: Fish Marketing Networks Provide Flexible Livelihood Opportunities on an East African Floodplain	M.A. Moreau, C.J. Garaway	Tanzania	Case study	244 surveys with market vendors, 27 semi structured interviews individual or group with market vendors, net owners, buyers, and other market participants	Informal fish market	Fish, fresh fish, fried fish, smoked fish
The Role of Indigenous Vegetables to Improve Food and Nutrition Security: Experiences From the Project HORTINLEA in Kenya (2014–2018)	W. Bokelmann, S. Huyskens-Keil, Z. Ferenczi, S. Stöber	Kenya	Review of case study	Summary of HORTINLEA project results	Informal markets	African Indigenous Vegetables [(African nightshade, Amaranth), Cowpea, Ethiopian kale and Spider plant]

buyers. Women were found to be involved in the selling and marketing of foods such as local vegetables and fried fish, with men being involved in selling other products such as fresh fish or other crops (Moreau and Garaway, 2021; Bokelmann et al., 2022). However, the literature also found that there were many barriers to market participation for women as vendors or buyers. These barriers included

time constraints due to childcare or food preparation duties, gender norms and relationships regarding status in the household, and/or lack of markets open for their participation (Mudege et al., 2017; Moreau and Garaway, 2021; Nabuuma et al., 2021). The literature also reported that women were often not involved in male market practices. One study in Uganda which focused on community

perspectives of rural smallholder farmers reported that men were perceived to be more likely to sell the total crop harvest and not save produce for their own household consumption compared with women (Nabuuma et al., 2021). Women's purchasing power in traditional food markets and importance thereof was evidenced in a study done in Burkina Faso focusing on minimum dietary diversity among reproductive age women. This study reported that purchasing foods from the market rather than at street vendors or small shops and households receiving a regular income were positively associated with meeting minimum dietary diversity, although the gender of the head of household in this scenario was not mentioned (Custodio et al., 2019).

Gender roles often influence the expected practices of men and women regarding their place in home and in society. Gender can influence the roles such as producing, purchasing, and preparing food for the individual or household and influence nutrition, with men or women being more likely to take up certain roles. The literature showed the strength of gender roles present regarding food and food practices in and or connected to the markets. In an article describing the results and experiences during the Horticultural Innovation and Learning for Improved Nutrition and Livelihood in East Africa (HORTINLEA) project in Kenya, almost 60% of the 1,500 people sampled indicated that women were responsible for producing African Indigenous Vegetables (AIVs) and a general view of AIVs as a "woman's crop" (Bokelmann et al., 2022). While women were noted to be heavily involved in the production and marketing of AIVs, the article reported that AIV sales account for only 9.4% of total household income, which can leave women with small budgets for themselves (Bokelmann et al., 2022). The inferred consequences of which are less time to spend on other activities outside of the food preparation and production. Moreau and Garaway (2021) also highlighted the duality of women's role in the Rufiji fish trade on the Rufiji River floodplain in Tanzania. Here, women were reported to be entitled to earnings and to participate in trading, although the products sold were highly gendered, with women typically selling fried fish while men sold more fresh or smoked fish (Moreau and Garaway, 2021). The study also reflected on the ambiguous position of women at the market. While women were entitled to earning and movement independence, the religious background of the region enforced patriarchal norms and desires for men to maintain control (Moreau and Garaway, 2021). Even with this influence on women's participation in the trade, trade is still important to local women given their ability to keep their earnings. Additionally, a study of 10 countries in Eastern and Southern Africa regions of SSA examined the COVID-19 challenges to sustainable food production and consumption. The study found that gendered differences were present in some countries and regions regarding the type of producer affected by the pandemic, consumption practices, and the impact of home gardens on food security during the pandemic (Nchanji and Lutomia, 2021). However, the results varied greatly across countries, making it difficult to generalize (Nchanji and Lutomia, 2021).

### 3.2 Markets, household food practices, and nutrition

Further to personal wellbeing, the capacity of women to participate in markets and practices relating to food and nutrition

security is closely linked to household wellbeing. Custodio et al. (2019) explored household indicators that affected the minimum dietary diversity of women. For example, they found that household expenses and education of the head of household were positively correlated with dietary diversity among urban women in Burkina Faso, while the age of the head of the household was inversely related to women's minimum dietary diversity (Custodio et al., 2019). Nabuuma et al. (2021) noted that children and women can be at a nutritional disadvantage compared to men in farming households, which can be due to meal opportunities away from home and leaving household nutritional decisions to their wives. However, Mudege et al. (2017) found that improving women's control over financial and physical assets had a positive impact on food security, child nutrition, education, and the general wellbeing of women. The literature infers that empowering women to participate in household decision making beyond typical gender roles, enhances the influence of agricultural interventions on diets and other nutritional outcomes. It also suggests that by providing a platform for women to share their knowledge and skills regarding certain crop production and preparation practices could help in lessening gendered knowledge divides (Bokelmann et al., 2022).

## 4 Discussion

While few papers were identified in this mini review, they do illustrate insightful nuances and further underscore the need for more explicit gender studies that can better inform the existing knowledge of the experiences of gender and nutritional security of women and men in and/or as linked to traditional food markets in SSA. The studies consisted of qualitative and quantitative case studies spanning from 1 month to up to 2 years that utilized surveys, interviews, and focus group discussions in SSA. Nchanji and Lutomia (2021) demonstrated the differences in gender influences across different SSA countries in Eastern and Southern Africa, and this geographic and social contextualization needs to be part of future research into markets.

Gender was explicitly studied in three of the studies, while the other three included gender as an aspect further in the paper to explore the results. A broad range of search terms were used in an attempt to capture all possible relevant literature in the search, which still resulted in only six appropriate papers. While this review cannot speak to an explicit overview of the themes of gender, food and nutrition security, and traditional food markets in the country contexts, it does offer a look into some of the directions current research has taken to approach this nexus topic and suggests potential opportunities to understand where future research should focus.

The six papers reviewed typically focused on specific situations in the market(s), such as fishing economies or African Indigenous Vegetables (Moreau and Garaway, 2021; Bokelmann et al., 2022). When developing the studies, many papers did not focus solely on a gendered or a female-centered perspective, they rather included gendered elements throughout the paper. The papers also did not include any explicit definitions of gender, instead relying on implicit traditional constructs of men and women when looking at gender differences. Five studies included a male perspective, such as Mudege et al. (2017), who focused on male and female farmers' perceptions on health and economic priorities. The inclusion of the

specific perceptions of men and women in the papers such as by Mudege et al. (2017) is a promising start, but by only implicitly defining gender in these studies, they fail to use a standard accepted concept of gender. Operationalizing gender in a comprehensive and explicit way is important to understand the association between gender and traditional markets and nutrition. Overall, the participation of women in traditional markets and nutrition was found to be important and crucial to not only themselves but also to their households in some contexts, but barriers explicitly and implicitly to gender were found in each different context (Moreau and Garaway, 2021; Bokelmann et al., 2022).

Recent literature concerning a gendered perspective on addressing nutrition has provided insight into how the framing of gender is important. Gender is typically used as a static, homogenous concept which can be good as an entry point into understanding its influences, but could be further expanded to a more intersectional lens in order to more fully encapsulate the experience in markets and food production (Kanenberg et al., 2019; Tavenner et al., 2022; Vercillo et al., 2023). This could offer a useful way with which to explore both male and female experiences regarding market food practices and nutrition, especially as the literature showed how interactions between men and women influences their experiences at the market (Mudege et al., 2017; Moreau and Garaway, 2021; Bokelmann et al., 2022). The reviewed literature appeared to demonstrate gender differences regarding participation in markets and decision making regarding nutrition, but did not delve more deeply into conceptualizing gender to steer their studies.

Additionally, much of the current literature focuses on the producer and vendor side of market involvement and neglects the perspective of consumers at traditional markets. Given the importance highlighted in the literature of purchasing power for women, understanding the perspectives of consumers could offer more insight into the influences of gender in traditional food markets in SSA and food and nutrition security. Future research could focus on the sources of income, decision making power for foods, and perceptions on nutrition and how that influences food purchasing choices. Finally, SSA encompasses a multitude of countries and food contexts, which should be addressed when developing research and interventions.

The scarcity of literature on this nexus topic confirms the initial scoping of this study and reinforces the awareness that a significant knowledge gap exists – at least with respect to peer reviewed, English language publications between 2017 and 2022, in recognized journals as per the databases: PubMed, Embase, Web of Science, and ScienceDirect. The significance of this gap is further amplified by the complexity and scale of the global challenge of malnutrition, especially in SSA and the importance of gender regarding nutritional outcomes, inclusive development, and sustainability, through the lens of traditional markets.

Future research should include gender more explicitly within inclusive, sustainable food system studies and/or specifically explore the nexus influence and experience of gender and access to a diversity

of staple and nutritious foods within urban and/or rural traditional food markets in SSA as part of personal sustainability and wellbeing, local food environments and as nodes in wider food systems. There is a pressing need for the diversity of interdisciplinary studies on sustainability and food systems to better operationalize gender and gender influences in the study design and implementation of the research, to help guide the results and implications of their studies. By focusing on these factors, future research can continue to explore the influence of gender in nutrition and market practices in SSA in a focused way.

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EdK: Writing – original draft, Writing – review & editing. AT-J: Conceptualization, Funding acquisition, Project administration, Supervision, Writing – original draft, Writing – review & editing. CB: Writing – original draft.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frsus.2024.1321499/full#supplementary-material>

## References

- Aberman, N., Meerman, J., and van de Riet, A. (2022). *Integrating gender into the governance of urban food systems for improved nutrition*. Gain. Geneva (CH); (2022).
- Bokelmann, W., Huyskens-Keil, S., Ferenczi, Z., and Stöber, S. (2022). The role of indigenous vegetables to improve food and nutrition security: experiences from the project HORTINLEA in Kenya (2014–2018). *Front Sustain Food Syst* 6:806420. doi: 10.3389/frsus.2022.806420
- Chege, C. G. K., Onyango, K., Kabach, J., and Lundy, M. (2022). Effects of COVID-19 on dietary behavior of urban consumers in Nairobi, Kenya. *Front Sustain Food Syst* 6:718443. doi: 10.3389/frsus.2022.718443
- Crush, J., Frayne, B., and Pendleton, W. (2012). The crisis of food insecurity in African cities. *J Hunger Environ Nutr* 7, 271–292. doi: 10.1080/19320248.2012.702448

- Custodio, E., Kayikati, F., Fortin, S., Thomas, A. C., Kameli, Y., Nkunzimana, T., et al. (2019). Minimum dietary diversity among women of reproductive age in urban Burkina Faso. *Matern Child Nutr* 16, 1–12. doi: 10.1111/mcn.12897
- Davies, J., Blekking, J., Hannah, C., Zimmer, A., Joshi, N., Anderson, P., et al. (2022). Governance of traditional markets and rural-urban food systems in sub-Saharan Africa. *Habitat Int* 127:102620. doi: 10.1016/j.habitatint.2022.102620
- Davies, J., Hannah, C., Guido, Z., Zimmer, A., McCann, L., Battersby, J., et al. (2021). Barriers to urban agriculture in sub-Saharan Africa. *Food Policy* 103:101999. doi: 10.1016/j.foodpol.2020.101999
- Downs, S. M., Ahmed, S., Fanzo, J., and Herfort, A. (2020). Food environment typology: advancing an expanded definition, framework, and methodological approach for improved characterization of wild, cultivated, and built food environments toward sustainable diets. *Foods* 9:532. doi: 10.3390/foods9040532
- Ferrari, R. (2015). Writing narrative style literature reviews. *Med Writ* 4, 230–235. doi: 10.1179/2047480615Z.000000000329
- Food and Agriculture Organization of the United Nations. *Report of the world food summit [internet]*. Rome (IT): FAO; (1996) 13–17.
- Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's fund, World Food Programme, World Health Organization (2023). "The state of food security and nutrition in the world 2023" in *Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum* (Rome (IT): FAO)
- Frayne, B., Pendleton, W., Crush, J., Acquah, B., Battersby, J., Bras, E., et al. (2010). The state of urban food insecurity in southern Africa. *Urban Food Secur.* 2
- Gebissa, B., and Geremew, W. (2022). Determinants of food insecurity and the choice of livelihood strategies: the case of Abay Chomen District, Oromia regional state, Ethiopia. *Sci World J* 2022:1316409. doi: 10.1155/2022/1316409
- Giner, C., Hobeika, M., and Fischetti, C. (2022). *Gender and food systems: overcoming evidence gaps*. Paris, France: OECD Publishing, 184.
- Greig, A., and Flood, M. (2020). Work with men and boys for gender equality: a review of field formation, the evidence base and future directions. *UN Women [Internet]* Available at: <https://www.unwomen.org/en/digital-library/publications/2020/11/discussion-paper-work-with-men-and-boys-for-gender-equality>
- Hannah, C., Davies, J., Green, R., Zimmer, A., Anderson, P., Battersby, J., et al. (2022). Persistence of open-air markets in the food systems of Africa's secondary cities. *Cities* 124:103608. doi: 10.1016/j.cities.2022.103608
- Ingram, J. (2020). Nutrition security is more than food security. *Nat Food* 1:2. doi: 10.1038/s43016-019-0002-4
- Kanenberg, H., Leal, R., and Erich, S. A. (2019). Revisiting McPhail's feminist policy analysis framework. *Adv Social Work* 19, 1–22. doi: 10.18060/22639
- Keding, G. B., Kehlenbeck, K., Kennedy, G., and McMullin, S. (2017). Fruit production and consumption: practices, preferences and attitudes of women in rural western Kenya. *Food Secur* 9, 453–469. doi: 10.1007/s12571-017-0677-z
- Laar, A. K., Addo, P., Aryeetey, R., Agyemang, C., Zotor, F., Asiki, G., et al. (2022). Perspective: food environment research priorities for Africa—lessons from the Africa food environment research network. *Adv Nutr* 13, 739–747. doi: 10.1093/advances/nmac019
- McCordic, C. R., Crush, J., and Frayne, B. (2019). Urban shocks: the relationship between food prices and food security in Lesotho. *J Hunger Environ Nutr* 14, 574–592. doi: 10.1080/19320248.2018.1434095
- Middendorf, B. J., Faye, A., Middendorf, G., Stewart, Z. P., Jha, P. K., and Prasad, P. V. (2021). Smallholder farmer perceptions about the impact of COVID-19 on agriculture and livelihoods in Senegal. *Agric Syst* 190:103108. doi: 10.1016/j.agry.2021.103108
- Milner, D., Wolf, L., Wijk, M. V., and Hammond, J. (2022). Market access and dietary diversity: a spatially explicit multi-level analysis in southern and Western Kenya. *Front Sustain Food Syst* 6:740485. doi: 10.3389/frsus.2022.740485
- Moreau, M. A., and Garaway, C. J. (2021). Trading fast and slow: fish marketing Networks provide flexible livelihood opportunities on an east African floodplain. *Sustain Food Syst* 5:742803. doi: 10.3389/frsus.2021.742803
- Mudege, N. N., Mayanja, S., and Muzhingi, T. (2017). Women and men farmer perceptions of economic and health benefits of orange fleshed sweet potato (OFSP) in Phalobne and Chikwawa districts in Malawi. *Food Secur* 9, 387–400. doi: 10.1007/s12571-017-0651-9
- Nabuuma, D., Ekesa, B., Faber, M., and Mbhenyane, X. (2021). Community perspectives on food security and dietary diversity among rural smallholder farmers: a qualitative study in Central Uganda. *J Agric Food Res* 5:100183. doi: 10.1016/j.jafr.2021.100183
- Nchanji, E. B., and Lutomia, C. K. (2021). COVID-19 challenges to sustainable food production and consumption: future lessons for food systems in eastern and southern Africa from a gender lens. *Sustain Prod Consum* 27, 2208–2220. doi: 10.1016/j.spc.2021.05.016
- Ochieng, J., Afari-Sefa, V., Karanja, D., Kessy, R., Rajendran, S., and Samali, S. (2017). How promoting consumption of traditional African vegetables affects household nutrition security in Tanzania. *Renew Agri Food Syst* 33, 105–115. doi: 10.1017/S1742170516000508
- Sibhatu, K. T., Arslan, A., and Zucchini, E. (2022). The effect of agricultural programs on dietary diversity and food security: insights from the smallholder productivity promotion program in Zambia. *Food Policy* 113:102268. doi: 10.1016/j.foodpol.2022.102268
- Skinner, C. (2016). "Informal food retail in Africa: a review of evidence" in *Consuming urban poverty project working paper*. Eds. J. Battersby and V. Watson, (Rondebosch, South Africa: Consuming Urban Poverty project).
- Smit, W. (2016). Urban governance and urban food systems in Africa: examining the linkages. *Cities* 58, 80–86. doi: 10.1016/j.cities.2016.05.001
- Tavener, K., Crane, T. A., Bullock, R., and Galiè, A. (2022). Intersectionality in gender and agriculture: toward an applied research design. *Gen Tech Dev* 26, 385–403. doi: 10.1080/09718524.2022.2140383
- Turner, C., Aggarwal, A., Walls, H., Herforth, A., Drewnowski, A., Coates, J., et al. (2018). Concepts and critical perspectives for food environment research: a global framework with implications for action in low-and middle-income countries. *Glob Food Secur* 18, 93–101. doi: 10.1016/j.gfs.2018.08.003
- United Nations Department of Economic and Social Affairs (2022). *The Sustainable Development Goals Report 2022*. New York, USA. Available at: <https://unstats.un.org/sdgs/report/2022/>
- United Nations General Assembly. *Resolution 70/1, transforming our world: The 2030 agenda for sustainable development*. New York: United Nations General Assembly, (2015).
- United Nations Human Settlements Programme. *World cities report 2022 [internet]*. Nairobi, United Nations Human Settlements Programme. (2022) Available at: <https://unhabitat.org/wcr/>
- United Nations System Standing Committee on Nutrition. *The decade of action on nutrition 2016–2025 [internet]*. (2016) Available at: <https://www.unscn.org/en/topics/un-decade-of-action-on-nutrition?pages=4>
- Vercillo, S., Rao, S., Ragetlie, R., and Vansteenkiste, J. (2023). Nourishing the nexus: a feminists analysis of gender, nutrition and Agri-food development policies and practices. *Eur J Dev Res*, 1–33. doi: 10.1057/s41287-023-00581-1
- Visser, J., and Wangu, J. (2021). Women's dual centrality in food security solutions: the need for a stronger gender lens in food systems' transformation. *Curr Res Environ Sustain* 3:100094. doi: 10.1016/j.crsust.2021.100094
- World Health Organization (2019). *Food and agriculture Organization of the United Nations. Sustainable healthy Diets: guiding principles [Internet]* Available at: <https://www.who.int/publications/i/item/9789241516648>