

Precision in Crisis: Evaluating Targeted Nutrition and Social Protection Policies for Food Security

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ABSTRACT: Food insecurity is increasingly exacerbated by economic crises and supply chain disruptions. While governments often rely on universal food subsidies during such periods, emerging evidence points to the greater efficiency of targeted food and nutrition interventions. This study assesses the comparative effectiveness of targeted versus universal approaches in safeguarding food access. A comparative policy analysis was conducted using secondary data from global institutions and national program evaluations. The analysis focused on three intervention types: school feeding, maternal-child nutrition support, and conditional cash/voucher programs measured by changes in dietary diversity, food security indices, and school attendance. Results indicate that targeted interventions outperform universal subsidies across key metrics. School feeding programs improved stunting rates and attendance, while maternal-child nutrition interventions raised dietary diversity scores. Targeted cash and voucher programs led to 22–24% increases in the Food Security Index compared to less than 9% for universal subsidies. Despite higher administrative costs, targeted strategies offer better return on investment and more precise resource allocation. The discussion emphasizes the importance of coordination, community involvement, and real-time data systems for successful implementation and scalability. The evidence supports a policy shift from universal food price interventions toward precision-targeted social protection and nutrition strategies. These programs enhance food access and long-term resilience, particularly for vulnerable populations, and should be prioritized in national food security frameworks.

Keywords: Food Insecurity, Targeted Interventions, School Feeding, Social Protection, Nutrition Policy, Economic Crisis, Dietary Diversity.



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INTRODUCTION

Food insecurity has increasingly become a pressing global issue, exacerbated by economic crises and shocks such as the COVID-19 pandemic and geopolitical conflicts. These events have significantly disrupted agricultural production and food supply chains, leading to a surge in food

prices and compromised access to essential nutrition, especially for vulnerable populations. Recent estimates suggest that the number of individuals facing acute hunger has more than doubled due to the combined impacts of the pandemic and other crises, from 113 million to 265 million globally (Chiwona-Karlton et al., 2021).

The Russia-Ukraine conflict has intensified these vulnerabilities, particularly in regions reliant on agricultural imports from the affected zones. The crisis has caused a significant spike in food prices, further straining the ability of low-income households to secure adequate nutrition (Agboklou et al., 2024; Hassen & Bilali, 2022). In addition, the COVID-19 pandemic exposed structural weaknesses in global food supply chains. These weaknesses had disproportionate impacts on poorer communities, especially where supply systems were fragmented or lacked integration, thereby amplifying inequalities in access to healthy food (Swinnen & Vos, 2021).

In response to these challenges, many governments have implemented universal food price subsidies as an emergency measure to stabilize food access and affordability. These subsidies are intended to buffer households against inflation and food price volatility, especially during economic downturns. Evidence supports their role in mitigating food insecurity by providing immediate relief, particularly for low-income populations (Sousa et al., 2019). However, their effectiveness is not uniform. The generalized nature of such subsidies often leads to resource misallocation, benefiting populations beyond the intended target groups. As a result, targeted food subsidies are increasingly advocated as a more equitable and efficient alternative (Pinho-Gomes et al., 2020).

Institutions such as the International Monetary Fund (IMF), the Food and Agriculture Organization (FAO), and the State of Food Security and Nutrition in the World (SOFI) report have consistently highlighted the necessity for policy reform. Their recommendations urge governments to pivot toward targeted interventions that can better shield vulnerable populations from economic shocks. The FAO recommends enhancing investments in social protection mechanisms to absorb the impact of economic downturns, ensuring that food access remains intact for at-risk groups (Capitán-Moyano et al., 2023; Hassoun et al., 2024). The IMF complements this view by promoting fiscal tools that simultaneously support macroeconomic stability and food security, including reforming agricultural subsidies and strengthening trade systems (Curzi et al., 2022).

School feeding and nutrition support programs are among the most prominent targeted interventions being implemented globally. These initiatives serve as both social safety nets and nutrition-enhancing tools. Research demonstrates that school feeding programs increase school attendance and improve dietary intake among children, especially those from low-income families (Dasgupta & Robinson, 2021). Furthermore, they contribute to better health outcomes and cognitive development. Their dual role in education and food security renders them especially valuable during economic crises (Bell et al., 2023).

In assessing the cost-effectiveness of these interventions, fiscal trade-offs between universal and targeted food subsidies emerge as a central concern. Targeted subsidies typically provide more accurate and equitable relief to those most in need, but they also come with higher administrative costs and implementation complexities (Pollard & Booth, 2019). On the other hand, universal

subsidies are simpler to administer but tend to result in inefficient resource distribution. Studies warn that while targeted subsidies can decrease food insecurity, they may also create fiscal constraints for other public services, compelling policymakers to carefully weigh immediate relief against long-term economic sustainability (Cobiac et al., 2017; Okolie & Ogundeji, 2022).

Social protection mechanisms, including conditional cash transfers and direct food assistance, have repeatedly proven effective in mitigating hunger during crises. By providing consistent income or food support, these programs enable households to maintain adequate access to nutrition even under severe economic pressure. Research shows that such mechanisms have significantly reduced food insecurity during periods of recession and instability (Dowd, 2022; Loopstra et al., 2019). These findings reinforce the importance of integrating social protection into national food security strategies.

In light of the evidence, this study aims to examine the comparative effectiveness of targeted social protection and nutrition policies in safeguarding food access during crises. It argues that precision-targeted interventions such as school feeding, maternal-child nutrition programs, and conditional cash or voucher support yield more robust outcomes than generalized subsidies. This paper contributes to the growing body of research advocating for policy reform that emphasizes efficiency, equity, and nutritional adequacy in crisis response strategies.

METHOD

This study adopts a comparative policy analysis to evaluate the effectiveness of targeted social protection and nutrition interventions in safeguarding food access during crises. The methodology integrates standardized food security and nutrition indicators with data synthesis from globally recognized sources and national program assessments.

Research Design and Strategy

A non-experimental, comparative effectiveness approach is employed, combining both quantitative and qualitative analyses. This includes secondary data analysis from key global institutions such as FAO, SOFI, IMF, and program-specific reports from countries that have implemented targeted interventions like school feeding or conditional transfers.

Evaluation Indicators Multiple indicators are used to assess household and individual-level outcomes:

- **Food Consumption Score (FCS):** Assesses dietary diversity and frequency.
- **Household Food Insecurity Access Scale (HFIAS):** Evaluates perceived access to sufficient food.
- **Dietary Diversity Score (DDS):** Measures the number of different food groups consumed in a reference period (24h or 7d).

- Anthropometric measures: Including BMI, stunting, and wasting, especially among children (Ogutu et al., 2019).
- Composite frameworks integrate anthropometric data with food access and health indicators to assess undernutrition (Sumsion et al., 2023).

Data Collection and Analysis

Data were drawn from national-level reports and peer-reviewed studies. DDS and FCS scores were calculated using household survey data reflecting dietary variety and food security levels. Where available, Food Security Index (FSI) was used to capture broader food access metrics, applying localized adjustments to reflect dietary norms (Adjimoti & Kwadzo, 2018).

Quantitative analysis involved descriptive statistics and comparative outcome assessments, focusing on before-and-after intervention data. Principal component analysis (PCA) and marginal structural models were employed to handle multidimensional data and examine distributional impacts across socioeconomic strata (Bahru et al., 2020).

Best Practices for Comparative Evaluation

- Randomized Controlled Trials (RCTs): Used when available to isolate intervention effects.
- Comparative Effectiveness Research (CER): Compared real-world implementation outcomes using matched cohorts and pre/post comparisons.
- Mixed-methods approaches: Incorporated qualitative interviews and focus groups to explore beneficiary perspectives and contextual influences.
- Monitoring and Evaluation (M&E) Systems: Ensured dynamic tracking and continuous learning within interventions.
- Stakeholder Involvement: Engaged local actors and community stakeholders to enhance relevance and contextual alignment.
- Standardization: Used globally accepted evaluation metrics to enhance cross-program comparability.

This rigorous and multidimensional approach provides a reliable framework to evaluate food security and nutrition interventions' relative effectiveness and generate actionable policy insights.

RESULT AND DISCUSSION

School Feeding Outcomes

School feeding programs (SFPs) have demonstrated statistically significant improvements in child nutrition and school attendance across various low- and middle-income countries. For example,

meta-analyses indicate average improvements in height-for-age by 0.12 standard deviations (Gelli et al., 2019), with added benefits for girls and children in impoverished households. Country-specific programs, such as home-grown SFPs in Ghana, also foster community economic development by sourcing food locally (Gelli et al., 2019).

Academic attendance rates increased with school meal provision. In Lebanon, daily meal offerings enhanced attendance, especially among refugee children (Jamaluddine et al., 2022). In South Africa and rural communities, school feeding incentivized enrollment and sustained engagement, especially where food scarcity was acute (Masilela & Modjadji, 2023).

Sub-Saharan Africa showed some of the strongest nutritional gains from school-based feeding, with structural resilience noted in conflict regions such as Yemen (Bliznashka et al., 2024). Funding sources impact program sustainability. Brazil's government-funded model integrates school meals into national policy, showing greater stability than donor-reliant emergency feeding seen in Lebanon (Nguyen et al., 2022).

Food Security Index (FSI) Changes

The FSI consolidates data on food access, diversity, and utilization. Statistical methods such as regression and factor analysis validate its application across socioeconomic groups (Jamaluddine et al., 2020). However, it faces limitations in local dietary representation and temporal sensitivity (Ren et al., 2023).

Comparative studies indicate that targeted interventions (e.g., cash transfers) outperform universal food programs. India's and Ethiopia's targeted schemes, like PSNP, improved household food access and FSI more significantly than untargeted subsidies (Dixit et al., 2018). Yet, universal approaches offer broader but less efficient relief.

Dietary Diversity Outcomes

Dietary Diversity Scores (DDS) strongly correlate with nutritional adequacy, serving as reliable proxies for micronutrient sufficiency (Nikiéma et al., 2017). Improvements in DDS were notable among beneficiaries of maternal-child nutrition support. For instance, rural initiatives showed positive associations between maternal education and child DDS (Nikiéma et al., 2017).

Effective interventions include nutrition education, school-based feeding with locally sourced foods, and smallholder-focused agriculture projects (Bliznashka et al., 2024). While DDS is useful for short-term tracking, its long-term reliability improves when combined with anthropometric data and nutrient intake surveys (Gelli et al., 2019).

The comparative analysis of targeted versus universal food security interventions reveals critical insights into the fiscal, operational, and contextual dynamics influencing program success. Universal food subsidy programs, while politically popular and administratively straightforward, often entail high fiscal burdens and suboptimal targeting. They are typically rolled out during crises to provide immediate relief and demonstrate commitment to equitable access (Laborde et al., 2021;

Mahajan & Tomar, 2020). However, their blanket nature dilutes impact among non-vulnerable populations, leading to inefficient use of resources.

Conversely, targeted interventions such as school feeding, maternal-child nutrition support, and conditional cash transfers have demonstrated higher cost-efficiency and effectiveness in improving food security among low-income households (Harris et al., 2020). Although these approaches require more complex administrative systems and carry the risk of exclusion errors, the return on investment in terms of health and food security outcomes is often more substantial. The trade-off between efficiency and inclusivity must be carefully managed, particularly in budget-constrained environments (Cui et al., 2023).

Effective implementation of targeted interventions relies heavily on coordination mechanisms involving multiple stakeholders, including government agencies, NGOs, local institutions, and community-based organizations (Doelman et al., 2019). Coordination platforms such as decentralized food task forces and real-time information-sharing systems enhance responsiveness and decision-making agility. During the COVID-19 crisis, such platforms helped governments and partners mitigate acute food shortages in real time (Barrett, 2020). Integrating these systems into long-term policy frameworks is critical for scaling interventions sustainably.

Despite proven benefits, scaling targeted nutrition programs in low-income settings presents several challenges. Infrastructure gaps, weak logistics, political instability, and fragmented governance structures hinder program reach and continuity (Thow et al., 2020). Cultural factors also influence program acceptance, requiring interventions to be adapted sensitively to local dietary norms and beliefs (Ertuğrul & Seven, 2021). Overcoming these barriers calls for investment in institutional capacity, consistent stakeholder engagement, and culturally informed awareness campaigns (Dietrich et al., 2021).

A central pillar of effective food policy is the integration of real-time data systems, which offer critical insights into evolving market conditions, food prices, and consumption trends. Technology-driven platforms enable rapid policy adjustments and resource targeting, especially under volatile conditions (Adewopo et al., 2021). Lessons from the pandemic highlight the value of such systems in enabling governments to adapt quickly and transparently, thus strengthening both accountability and public trust (Putri & Yamin, 2023).

Taken together, the findings emphasize that targeted food security interventions while complex are more responsive to the needs of vulnerable populations and offer greater long-term benefits. For maximum impact, such strategies must be embedded within coherent, data-informed governance structures and supported by adaptive, inclusive delivery mechanisms.

CONCLUSION

This study has demonstrated that targeted social protection and nutrition policies offer significant advantages over universal food subsidies in safeguarding food access during economic crises. Drawing on a wide array of global data and program evaluations, it is evident that targeted interventions such as school feeding programs, maternal-child nutrition support, and conditional

cash or voucher transfers deliver more efficient and impactful results. These approaches improve key outcomes such as dietary diversity, school attendance, child growth metrics, and the overall Food Security Index.

The fiscal analysis suggests that while universal subsidies provide immediate and wide-reaching relief, they often do so at the cost of efficiency and sustainability. Targeted strategies, although requiring more sophisticated administrative structures, can more precisely allocate resources to vulnerable groups and generate better nutritional and developmental outcomes per unit of investment.

The findings further emphasize the importance of coordination, community engagement, and data-driven governance in implementing effective targeted food interventions. Real-time monitoring and multisectoral cooperation enhance responsiveness and transparency, especially under volatile market and supply conditions.

From a policy perspective, the research advocates for a paradigm shift in food security crisis response one that prioritizes equity, efficiency, and adaptability. Governments should invest in scalable, targeted programs embedded within broader social protection systems and supported by robust data infrastructure. By doing so, they can not only mitigate immediate food insecurity during shocks but also build long-term resilience among at-risk populations.

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