

Universal Free School Meals in Developed Countries: A Systematic Review of Policy Impacts and Implementation

ABSTRACT - Universal free school meal policies have gained attention as instruments to improve dietary equity and child well-being in developed countries, but evidence on their outcomes and implementation remains fragmented. This systematic review synthesized evidence on universal free meal policies across developed countries. Following PRISMA guidelines, six databases were searched, and studies published within the past decade were screened using predefined criteria. Of 699 records identified, 93 studies were included and synthesized narratively across participation and socioeconomic equity, nutritional intake, implementation, and educational, developmental, and behavioural outcomes. Findings indicate that universal provision increases participation, reduces stigma, and alleviates household financial pressure. However, nutritional benefits depend on meal quality, palatability, menu design, eating time, and the school food environment, while educational and behavioural effects are generally modest. Overall, universal access should be accompanied by attention to food quality, infrastructure, staffing, and supportive school environments. Further longitudinal and context-specific research is recommended.

ABSTRAK - Kebijakan makanan sekolah gratis universal semakin mendapat perhatian sebagai instrumen untuk meningkatkan pemerataan akses pangan dan kesejahteraan anak di negara-negara maju, tetapi bukti mengenai dampak dan implementasinya masih tersebar. Tinjauan sistematis ini bertujuan untuk mensintesis bukti mengenai kebijakan makanan sekolah gratis universal di berbagai negara maju. Mengikuti pedoman PRISMA, enam basis data ditelusuri dan studi yang diterbitkan dalam satu dekade terakhir diseleksi berdasarkan kriteria yang telah ditetapkan. Dari 699 artikel yang teridentifikasi, 93 studi disertakan dan disintesis secara naratif berdasarkan partisipasi dan pemerataan sosial ekonomi, asupan gizi, implementasi, serta hasil pendidikan, perkembangan, dan perilaku. Hasil menunjukkan bahwa penyediaan makanan secara universal meningkatkan partisipasi, mengurangi stigma, dan meringankan tekanan keuangan rumah tangga. Namun, manfaat gizi bergantung pada kualitas makanan, cita rasa, desain menu, waktu makan, dan lingkungan pangan sekolah, sedangkan dampak pendidikan dan perilaku umumnya bersifat moderat. Secara keseluruhan, akses universal perlu disertai perhatian terhadap kualitas makanan, infrastruktur, tenaga pelaksana, dan lingkungan sekolah yang mendukung. Penelitian longitudinal dan kontekstual lebih lanjut direkomendasikan.

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Kata Kunci

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INTRODUCTION

The nutritional condition of children critically determines their immediate health, cognitive development, and long-term well-being. In developed nations, where food is plentiful, a prevalence of dietary health issues such as obesity, micronutrient deficiencies, and the intake of energy-dense, nutrient-poor foods has been recorded over the past decades (Murray et al., 2020). School-aged children spend a considerable portion of their waking hours in educational environments, where they consume up to half of their daily energy intake. Consequently, the school food environment has become a central locus of public health intervention, as school meal programs are among the most extensive and long-lasting policy instruments for improving child nutrition (Finkelstein et al., 2008). Initially, these programs were intended to address undernutrition and food insecurity, yet their function has shifted to confront contemporary dietary challenges, including the overconsumption of ultra-processed foods and generally poor nutritional quality (Mikkelsen et al., 2005).

The COVID-19 pandemic further highlighted the vulnerability of children to food system disruptions. The abrupt closure of schools worldwide disrupted the protective role of school meal programs, resulting in reports of heightened food insecurity, shifts toward less nutritious food options, and economic hardship for families (Pereira & Oliveira, 2020). This disruption highlighted the essential role of school meal programs as a social protection mechanism and led policymakers in many developed nations to reassess the design and eligibility criteria of these initiatives. Increasing attention has therefore been directed toward universal provision, in which meals are provided free of charge to all students irrespective of household income, as an alternative to targeted or means-tested approaches in which eligibility is determined by financial need.

Although the effectiveness of school meal programs in general has been the subject of extensive research, the specific evidence base for universal free models in developed countries remains fragmented and inconclusive. Existing research has examined program reach, participation rates, and short-term nutritional outcomes, but a comprehensive synthesis comparing universal approaches with alternative targeting methods and examining the mediating role of implementation factors remains limited. Several important gaps can be identified. First, the socioeconomic gradient of participation and impact is poorly understood, and it remains unclear whether universal models effectively close equity gaps in dietary intake without creating perverse incentives or diluting resources for the most disadvantaged (Locke et al., 2025). Second, evidence connecting increased school meal participation with improvements in dietary quality is mixed. Some studies have documented positive changes in nutrient intake, whereas others indicate that consumption of offered foods remains suboptimal because of issues related to palatability and plate waste.

A further gap concerns the implementation of universal free meal policies. Although these policies aim to advance dietary health and equitable access, their practical implementation may be influenced by factors such as expense, supply chain issues, meal design, and training for food service personnel. A systematic understanding of how these contextual and programmatic factors influence outcomes remains limited. Evidence concerning educational and developmental outcomes, including academic achievement, behavioral indicators, and cognitive function, has also frequently been derived from natural experiments or small-scale studies and has not been sufficiently synthesized while accounting for differences in study design, context, and meal program structure. In addition, stakeholder perspectives, including those of students, parents, teachers, and school administrators, have been insufficiently examined, despite their importance for understanding acceptability, sustainability, and the processes through which school meals influence school



dynamics.

These gaps indicate the need for a systematic synthesis that extends beyond simply determining whether universal free school meal policies are effective. A comprehensive review is needed to examine how and under what conditions these policies achieve their intended outcomes. Such an approach can integrate evidence across multiple domains, including participation, nutritional intake, implementation, and educational outcomes, while considering the contextual factors that mediate the relationship between policy design and population health and well-being.

Accordingly, this systematic review aims to synthesize the available evidence on universal free meal policies in developed countries and to examine their impacts across multiple outcome domains. The review integrates findings from heterogeneous studies concerning participation, nutritional intake, implementation, and educational outcomes within a coherent framework. By focusing on developed nations, where undernutrition is less common but dietary quality and equity remain important concerns, this review provides a targeted synthesis of evidence relevant to the design, implementation, and evaluation of universal school meal policies.

RESEARCH METHODS

This systematic review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021), ensuring transparency and methodological rigor throughout the review process. A comprehensive search strategy was developed to identify relevant literature on free meal policies in developed countries. Six electronic databases were systematically searched: PubMed, Web of Science, Scopus, ScienceDirect, SpringerLink, and Google Scholar. The search strings were adapted to the syntax of each database while consistently combining terms concerning the intervention (free meals), the setting (school-based programs), and the geographical context (developed countries).

The search strategy used the following terms: ("free school meals" OR "universal free lunch" OR "free breakfast program" OR "no-cost meals" OR "subsidized meals") AND ("school meal program" OR "school feeding" OR "breakfast program" OR "lunch program") AND ("developed countries" OR "high-income countries" OR "Europe" OR "United States" OR "Canada" OR "Australia" OR "Japan" OR "United Kingdom"). Filters for publication date covering the last decade and English language were applied during the search process. The search was initially conducted in January 2024 and updated in April 2024 to capture recently published studies.

To structure the synthesis of the heterogeneous body of evidence, the included studies were organized according to five distinct thematic perspectives derived from the research question and the SPICE framework. The first thematic category, Programme Reach, Participation and Socioeconomic Equity, encompassed studies examining the extent to which free meal policies reach their target populations, factors influencing participation rates, and the distribution of benefits across different socioeconomic groups. The second category, Impacts on Nutritional Intake and Diet Quality, covered research assessing the direct dietary effects of free meal policies, including modifications in nutrient consumption, dietary patterns, and meal quality relative to alternative provisions. The third category, Implementation, Stakeholder Perceptions and Operational Challenges, included investigations of the practical delivery of free meal programs,

particularly cost, logistics, food quality, menu design, and the experiences and attitudes of students, parents, school staff, and food service personnel. The fourth category, Educational, Developmental and Behavioural Outcomes, included studies examining academic achievement, cognitive function, attendance, behaviour, and psychosocial well-being. The fifth and final category, Others, served as a repository for studies that did not neatly align with the preceding four dimensions, ensuring comprehensive capture of relevant evidence.

Clear inclusion and exclusion criteria were defined a priori. Studies were included when they were published within the past decade, focused on a developed nation as defined by the World Bank, OECD, or UN classification, addressed a free meals policy in a public setting, most commonly schools but also including workplaces, community centres, or public hospitals, and were primary research articles, systematic review documents, meta-analytic investigations, or structured policy evaluation reports from recognized agencies such as WHO or OECD. Studies also had to be available in English, with full text accessible through open access or institutional subscription. Studies were excluded when they solely addressed food vouchers, subsidies, or cash transfers without a direct in-kind meal provision component; comprised opinion pieces, editorials, commentaries, conference abstracts, or books without empirical data; concentrated exclusively on meal programs for clinical populations where universal access was not the primary objective; examined free meals only as a minor sub-element of a larger unrelated policy; depended on data predating 2014 unless explicitly justified as historical reviews providing necessary baseline context; or had full texts that could not be obtained after reasonable search efforts.

The study selection process followed the four-phase PRISMA flow model, as depicted in Figure 1. The systematic database search yielded 699 records. After the removal of 171 duplicate records, 528 unique records remained for initial screening. Two independent reviewers screened the titles and abstracts of these records against the predefined inclusion and exclusion criteria. Following this initial screening, 340 records were excluded. The remaining 188 reports were sought for full-text retrieval, of which 28 could not be retrieved. Consequently, 160 full-text reports were assessed for eligibility. During the full-text assessment, 67 reports were excluded because of insufficient data or outcomes ($n = 31$), the intervention was a voucher or cash transfer rather than a free meal program ($n = 15$), the study population was not from a developed country ($n = 12$), or the publication was an opinion piece or conference abstract without empirical data ($n = 9$). Ultimately, 93 studies met all inclusion criteria and were included in the final systematic review.



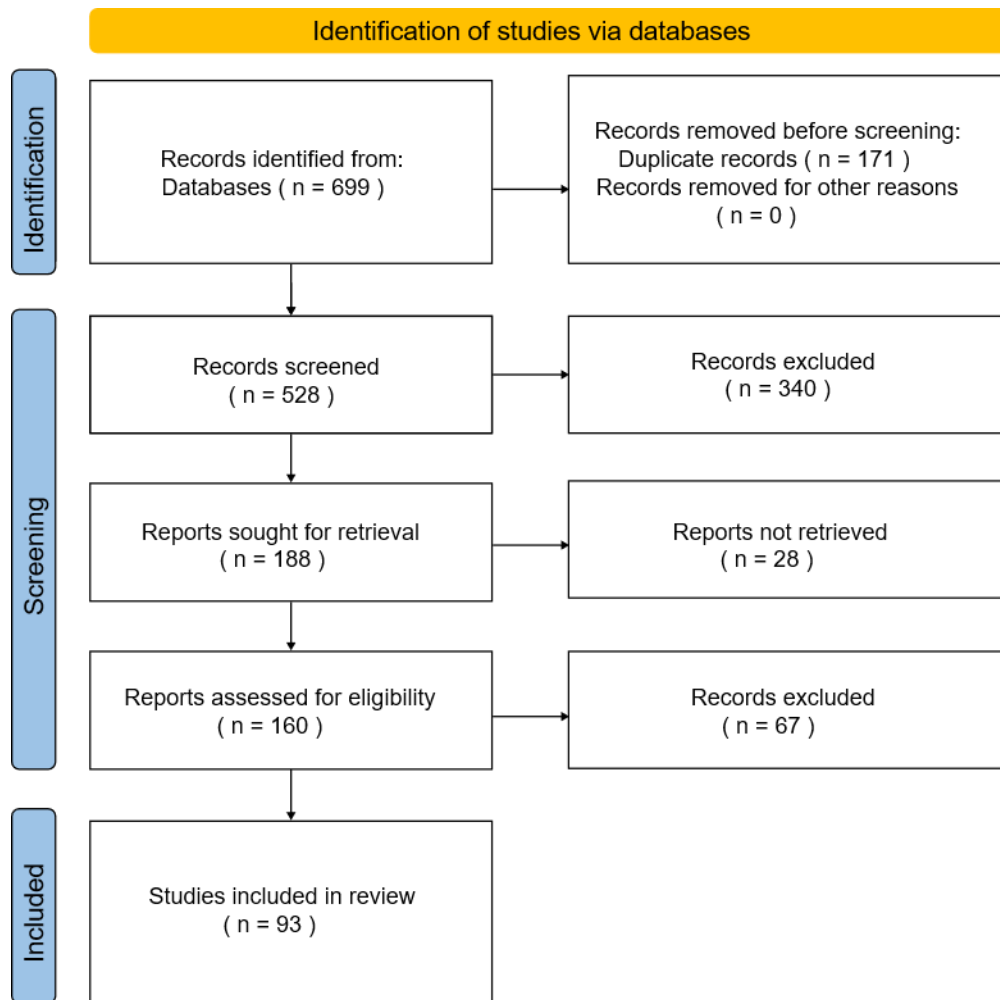


Figure 1. PRISMA flow diagram of the study selection process.

The methodological rigor of the included studies was appraised using instruments suited to their respective study designs. Randomized controlled trials were assessed using the Cochrane Risk of Bias tool, cohort and quasi-experimental studies were assessed using the Newcastle-Ottawa Scale, and cross-sectional studies were assessed using a modified version of the Joanna Briggs Institute (JBI) checklist. Each study was independently assessed by two reviewers, and disagreements were resolved through discussion. The overall quality of the included studies was moderate to high, and most studies showed adequate methodological rigor.

Because the included studies represented a heterogeneous body of evidence in terms of study designs and outcome measures, the findings were synthesized narratively according to the thematic perspectives described above. This approach was used to organize the evidence on programme reach, participation and socioeconomic equity; nutritional intake and diet quality; implementation, stakeholder perceptions and operational challenges; educational, developmental and behavioural outcomes; and other relevant evidence that did not fit within the preceding thematic categories.



RESULTS AND DISCUSSION

1. Research Trends

The chronological distribution of publications on free meals policies in developed countries indicates a research domain that has undergone substantial expansion, especially during the second half of the previous decade. As illustrated in Figure 2, the period before 2016 yielded thirty publications, thereby forming a foundational body of work that primarily examined targeted, means-tested programs in countries such as the United States and the United Kingdom. A notable inflection point occurred around 2021, at which the number of publications rose to twelve, twice the average annual output of the preceding years. This peak corresponds directly to the global disruption of the COVID-19 pandemic, a period when school closures and the resulting policy responses, such as emergency universal meal provisions, generated intense research interest and prompted a wave of natural experiments and rapid evaluations. The sustained high publication volume in 2022 (eight studies), 2023 (five studies), 2024 (twelve studies), and 2025 (ten studies) indicates this interest did not wane as the pandemic receded.

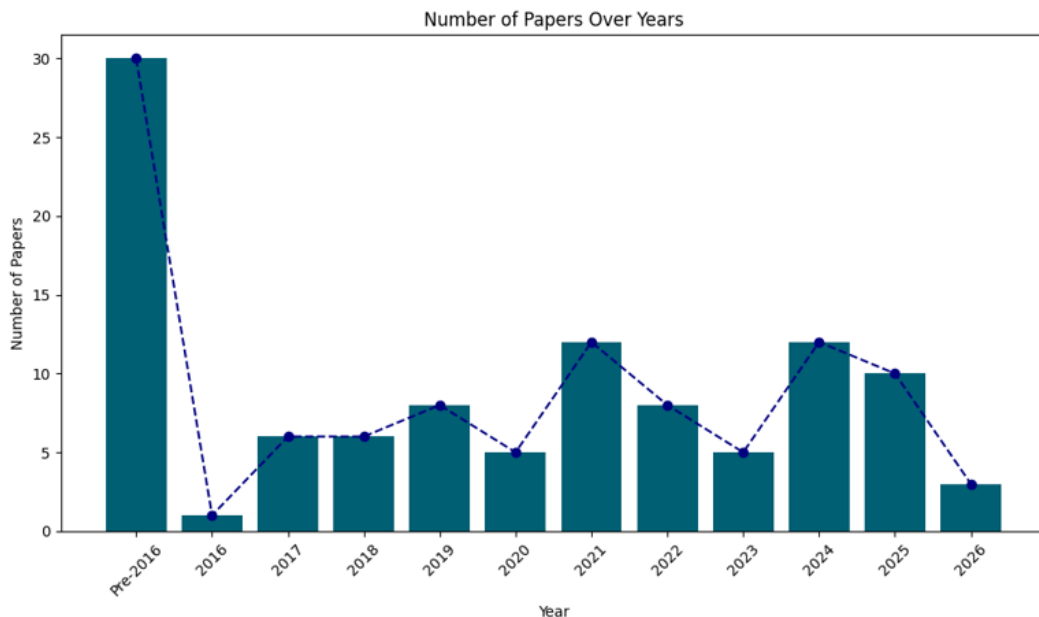


Figure 2. Research trends in the domain of Free meals policy in developed countries

Instead, the research agenda broadened from crisis-focused assessments to more nuanced investigations of long-term policy implications. This shift is apparent in the changing focus of the scholarly discourse, transitioning from concerns about immediate food security and logistical viability during lockdowns to more profound examinations of nutritional sufficiency, social fairness, and the relative efficacy of universal versus targeted approaches. The three publications already scheduled for 2026 indicate that the field continues to mature, as scholars now focus on the sustainability of newly adopted universal programs and



the long-term health and educational outcomes that can only be assessed with longitudinal data. This trend, therefore, indicates not merely a pandemic-induced surge in research activity but a deep and continuous redefinition of school meals as a universal social right rather than a poverty-focused measure, a conceptual shift that is now generating a sustained and increasingly sophisticated body of evidence.

2. Overview of Included Studies

Table 1 presents the main features of the included studies. The extracted data encompassed study identification, study design, population, context, the free meal policy examined, primary outcomes, and key findings, as applicable.

Table 1. Characteristics of the included studies

The included studies varied in terms of their study designs, target populations, and free meal policies analyzed. These differences offer important context for interpreting the review's results and for evaluating possible sources of heterogeneity across the evidence base. Overall, the table of characteristics offers a condensed overview of the selected studies and acts as the basis for the subsequent descriptive or quantitative analysis.

3. Programme Reach, Participation and Socioeconomic Equity

A central goal of free meal programs is to guarantee that every child, irrespective of their household's financial situation, receives a nutritious meal during the school day. The data concerning program coverage, participation levels, and socioeconomic fairness consistently indicate that universal free meal models achieve this aim more effectively than means-tested approaches, although critical subtleties related to implementation and fairness discrepancies continue to exist.

A large volume of research indicates that eliminating the cost of school meals greatly boosts rates of participation. For instance, one initial assessment of the "Operation Breakfast" universally-free school breakfast program in Central Falls, Rhode Island, indicated that the policy caused substantial increases in breakfast program participation, with the largest gains seen among nutritionally vulnerable and impoverished students (Cook et al., 1996). Similarly, studies examining the Community Eligibility Provision (CEP) in the United States consistently report positive effects on meal counts. An analysis of schools in Pennsylvania and Maryland indicated that, after accounting for prior participation rates, CEP was associated with an 8% rise in meal counts, driven largely by substantial gains in paid meal participation (Pokorney et al., 2019). In Texas, the adoption of CEP was associated with an average rise of 4.59 percentage points in school breakfast participation and 4.32 percentage points in lunch participation (Schneider et al., 2021). In California, among eligible schools that implemented universal free meal provisions (including CEP and older provisions), participation rates rose by an average of 3.48 percentage points for breakfast and 5.79 points for lunch in the subsequent year (Turner et al., 2019). Although the scale of these effects is limited in absolute terms, it constitutes a noteworthy improvement in the extent to which school meal programs reach students. A synthesis of this evidence, with particular attention to the main drivers of participation change and equity implications, is presented in Table 2.

Table 2. Programme reach, participation, and socioeconomic equity



The mechanisms driving these increases are multiple. First, the elimination of meal costs removes a direct financial barrier for families who are not eligible for free or reduced-price meals but may still struggle with affordability, particularly in high-cost-of-living areas (Cohen et al., 2024). Second, universal provision eliminates the stigma associated with means-tested programs, which has been identified as a major barrier to participation (Freeman et al., 2012). In a study of Maine school food authorities, respondents indicated that universal school meals resulted in decreased perceived stigma for students from lower-income households and the removal of unpaid meal charges and debt (Cohen et al., 2022). Third, the administrative simplification of universal programs, where schools no longer need to collect and process individual meal applications, reduces burden on families and schools alike (Gutierrez, 2025). This simplification is particularly beneficial for families who face language barriers, have limited literacy, or are reluctant to disclose their financial circumstances.

The equity implications of these participation increases are profound. Students from lower-income households, who are at greatest risk for food insecurity, are consistently more likely to participate in school meals than their higher-income peers under targeted programs (Gleason, 1995). However, the reach of these programs to the most vulnerable children is not always complete. For example, barriers such as the complexity of application forms and social stigma prevent enrollment even among eligible families (Freeman et al., 2012). Universal programs help to close this gap. An evaluation of the Massachusetts universal free school meal policy indicated that 42% of parents from households qualifying for free or reduced-price meals stated their child would be less inclined to eat school meals if the policy ended (Cohen et al., 2024). Furthermore, students who are near the income cutoff for means-tested benefits, often referred to as the “near-poor”, benefit disproportionately from universal programs, as they are ineligible for assistance but may still face food insecurity. A difference-in-difference analysis of the Healthy Communities Study identified that, relative to non-CEP schools, CEP schools exhibited a 12 percentage point higher lunch participation rate among students near the cutoff for free or reduced-price meals, and among full-price students, breakfast participation was 20 points higher and lunch participation 19 points higher (Tan et al., 2020).

Despite these achievements, important disparities in equity continue to exist. A worry is that the increase in participation under universal programs includes pupils who formerly brought meals from home, which may not necessarily improve the total nutritional picture. Investigations that contrast the nutritional value of school meals with packed lunches consistently find that school meals are superior in terms of nutrient density (Briefel et al., 2009) (Vernarelli & O'Brien, 2017), which implies that increased participation is likely advantageous. A further worry is that the advantages of universal programs might be distributed unevenly among racial and ethnic groups. To illustrate, a study of school district data indicated that for each percentage point growth in the percentage of school-aged children living in poverty, the concurrent increase in the percentage of students reported as eligible for free or reduced-price lunch was 62% less pronounced in school districts with a high proportion of Latinx students relative to districts with a high proportion of white students (Rahimi, 2021). This discrepancy stems from the fact that Latinx families are frequently underrepresented in other public benefit programs, such as SNAP, which serve as the basis for direct certification of students for free meals under CEP; this situation may result in an underestimation of poverty within these communities. This result highlights the necessity of meticulous policy crafting so that universal programs do not accidentally generate fresh forms of inequality.



4. Impacts on Nutritional Intake and Diet Quality

The central question underpinning the nutritional rationale for free school meal policies is whether increased participation translates into meaningful improvements in children's dietary intake and overall diet quality. The evidence on this question is nuanced, indicating a complex interplay between the nutritional standards of the meals themselves, what children actually select and consume, and the broader dietary context of the child's day.

A steady result across numerous investigations indicates that school meals, when aligned with contemporary nutritional criteria, have better nutrient profiles than the options children would otherwise eat, especially packed lunches brought from home. Within a nationally representative analysis of NHANES data, researchers determined that children consuming school lunches achieved markedly superior nutritional quality compared to those obtaining lunches elsewhere (Vernarelli & O'Brien, 2017). Specifically, children who were eligible for free or reduced-price lunch but did not participate in the National School Lunch Program (NSLP) consumed approximately 60% more energy, 58% more total fat, 60% more saturated fat, 50% more solid fat, 61% more sodium, double the amount of added sugars, and less than half the amount of fruit compared to NSLP participants (Vernarelli & O'Brien, 2017). This pattern was consistent across both age and income categories, which indicates that the protective effect of school meals is robust.

Further supporting this, in the Healthy Communities Study, a cross-sectional analysis found that children who consumed school breakfast daily reported higher intakes of fruits, vegetables, dietary fiber, whole grains, dairy, and calcium, whereas those who consumed school lunch daily also had higher dairy and calcium intakes, with no notable increase in consumption of energy-dense, nutrient-poor foods or added sugars (Au et al., 2018).

Yet, the simple availability of nutritious food does not guarantee its consumption by children. The disparity between what is presented and what is consumed is exposed by plate waste studies. A detailed analysis of digital images of 1,102 student lunch trays in Title I elementary schools with universal free meals found a stark dichotomy between selection and consumption (Adams et al., 2021). Although a majority of lunches chosen (59%–97%) satisfied nutrient recommendations for most targets, only a minority met consumption targets for many key nutrients, such as total calories (5%), calcium (8%), iron (11%), vitamin A (18%), vitamin C (16%), and fiber (7%) (Adams et al., 2021). Conversely, 98% of students achieved the sodium consumption targets, which underscores an ongoing difficulty in school meal programs (Adams et al., 2021). This pattern was echoed in an analysis of New Zealand's Ka Ora, Ka Ako program, where 77.5% of nutrients analyzed from 302 randomly selected meals exceeded 30% of recommended daily intakes, but energy, calcium, and iron were consistently low compared to national and international standards (Seymour et al., 2022). These results suggest that, although the meals are formulated with nutritional objectives in mind, actual consumption is frequently less than ideal, influenced by taste, lack of familiarity, and limited time during the lunch period.

In response to the implementation of stricter nutritional standards, including those mandated by the Healthy, Hunger-Free Kids Act (HHFKA) of 2010 in the United States, the evidence on consumption patterns indicates a degree of resilience. A longitudinal study of middle school students in a low-income urban district compared selection and waste before and after the 2012 implementation of new standards (M. Schwartz et al., 2015). Despite anecdotal claims of increased waste, the study indicated that fruit selection by students



rose from 54% to 66%, and although vegetable selection fell from 68% to 52%, those students who did choose vegetables ate nearly 20% more of them (M. Schwartz et al., 2015). Furthermore, entrée consumption rose from 71% to 84%, which suggests that students were not simply rejecting the healthier options but were instead modifying their preferences (M. Schwartz et al., 2015). Together, these findings indicate that restructuring school meals nutritionally, though difficult, can produce favorable changes in dietary consumption without a net rise in food waste.

A major issue with universal policies is whether the increased consumption of school meals simply displaces less nutritious items from other sources, or whether it results in a genuine improvement in the overall daily diet. The evidence here is mixed. On one hand, an extensive experimental study of universal-free school breakfast in six school districts observed that although participation rose markedly (from 16% to 40%), total dietary intake over 24 hours remained essentially equivalent between treatment and control groups after one year (Crepinsek et al., 2006). This suggests that the school program may have replaced food that would otherwise have been consumed at home, at least for breakfast, rather than yielding a net nutritional benefit. Conversely, a methodological approach that controlled for weekend eating habits (as a proxy for underlying food preferences) in the analysis of NHANES data yielded more nuanced results for lunch (Hanson & Olson, 2013). Overall, participants and nonparticipants had equivalent energy intakes and total diet quality scores, but participants scored higher for milk and lower for saturated fat and sodium after adjustment for weekend eating, and importantly, low-income children who ate school meals had higher total diet quality scores (Hanson & Olson, 2013). This indicates that the beneficial effect of school meals is greatest for the most disadvantaged groups.

The circumstances surrounding the school day and the accessibility of competitive foods also play a crucial role. Based on national dietary recall data from 2004-2005, one study found that children consumed 527 empty calories on a typical school day, with the largest contribution from home (276 kcal) rather than school (174 kcal) (Briefel et al., 2009). Within the school setting, notable distinctions were observed: NSLP participants obtained less energy from sugar-sweetened beverages at school than nonparticipants, yet in secondary schools, they obtained more energy from low-nutrient, energy-dense solid foods such as french fries and higher-fat baked goods (Briefel et al., 2009). This differential is attributable to the availability of “competitive foods”, items sold à la carte, in vending machines, or as “competitive entrées”, which can undermine the nutritional intent of the reimbursable meal. Indeed, an evaluation of potential competitive entrées sold under proposed USDA rollbacks indicated that their Healthy Eating Index scores were, on average, 30 points lower than those of full reimbursable lunches, and fewer than 1% would meet the stricter Smart Snack standards (Cohen et al., 2020). This highlights the necessity of both supplying complimentary meals and administering the comprehensive school food ecosystem to optimize nutritional outcomes.

Another critical dimension of nutritional impact is the relationship between school meals and household food security. For many low-income families, school meals are a nutritional safety net. An investigation of the School Breakfast Program indicated its accessibility reduced the risk of marginal food insecurity for low-income households, though not necessarily for those already experiencing severe food insecurity (Bartfeld & Ahn, 2011). Similarly, a study of the Healthy, Hunger-Free Kids Act indicated that students from food-insecure and marginally secure households were substantially more likely to participate in school meals, which contributed a higher proportion of their daily energy (22% and 20% respectively) compared to food-secure students (13%) (Forrestal et al., 2021). Notably, in every cohort, the nutritional



standards of meals from schools exceeded those of meals obtained elsewhere (Forrestal et al., 2021). These results indicate that for children with the greatest nutritional need, school meals serve not merely as a source of calories but as a source of relatively high-quality calories, which can lessen the effect of household food insecurity on dietary intake. Table 3 presents a comprehensive summary of the studies directly assessing nutritional intake and diet quality outcomes.

Table 3. Nutritional intake and diet quality outcomes

The table also highlights the diverse methodologies employed to assess nutritional impacts, from direct plate waste analysis and 24-hour dietary recalls to surveys of caregiver perceptions. This heterogeneity in measurement is a limitation of the evidence base, as it complicates direct comparisons across studies and settings. Nonetheless, a number of recurrent topics become apparent. The quality of the food served is a necessary but not sufficient condition for improved nutritional intake; consumption is moderated by palatability, student choice, and time constraints. Second, the impact of school meals on total daily diet is context-dependent, with stronger positive effects observed for low-income children and at breakfast compared to lunch. Third, the broader school food environment, which encompasses competitive foods outside the reimbursable meal, can either support or undermine the policy's nutritional objectives. Finally, while school meals are associated with improved diet quality, the evidence for a sustained impact on long-term health outcomes such as obesity remains equivocal, likely because diet is only one of many determinants of weight status and because the magnitude of the nutritional shift, while meaningful, may not be sufficient to reverse population-level trends in isolation.

5. Implementation, Stakeholder Perceptions, and Operational Challenges

The process of converting the free meal policy from legislative intent into daily practice constitutes a complex undertaking that essentially dictates the program's scope, acceptance, and ultimate effect. This section synthesizes evidence on the practical realities of implementing free meal programs, based on the viewpoints of diverse stakeholders (such as students, parents, teachers, food service directors, and administrators) and examining the operational, logistical, and financial challenges that mediate program success. A comprehensive summary of these studies, which specifies the relevant stakeholders, documented benefits, and barriers, is presented in Table 4.

Table 4. Stakeholder perceptions, benefits, barriers, and operational challenges

A central theme emerging from the literature is the powerful role of stigma in shaping program perception and uptake, an obstacle that universal models are uniquely positioned to address. A growing body of research indicates that the means-tested approach, which obliges students from low-income households to identify themselves via a separate meal queue or payment mechanism, generates a social hierarchy that discourages participation among those most in need (Carlisle et al., 2023; Cohen et al., 2022; Freeman et al., 2012). An appraisal of a universal free school meals trial in two English secondary schools indicated that pupils, households, and personnel perceived a notable reduction in stigma as one of the most valuable results (Carlisle et al., 2023). One staff member was quoted as saying the change removed "the fear of being seen as different" (Carlisle et al., 2023). This viewpoint is echoed in American research, where school food service



directors in Maryland noted that the Community Eligibility Provision (CEP) “reduced the stigma of eating lunch for all students,” adding that prior to CEP, “some kids just wouldn’t come through the line because they didn’t want to be seen as free lunch kids” (Hecht et al., 2021). The administrative simplification inherent in universal programs also reduces “financial stigma”, the anxiety and embarrassment associated with accumulating meal debt or having a negative balance. In Maine, school food authorities noted that the removal of unpaid meal charges and debt was a major advantage, which alleviated a constant source of stress for both families and school staff (Cohen et al., 2022).

However, the rollout of universal free meal programs has faced notable operational difficulties, many of which were worsened by the exceptional conditions of the COVID-19 pandemic. The transition from cafeteria-based service to grab-and-go distribution, necessitated by school closures, imposed considerable strain on supply chains, personnel resources, and logistical systems. According to a survey of school food authorities in Maine, the principal difficulties of the COVID-era universal program were expenses, product and ingredient availability, and the long-term economic viability of school meal programs (Cohen et al., 2022). Similarly, research on California’s newly implemented universal school meal policy in 2022-2023 indicated that over 80% of school food authorities experienced product or ingredient availability issues, 77% faced staffing shortages, and 76% struggled with vendor or distributor logistics (Zuercher, Orta-Aleman, et al., 2024).

These operational difficulties are not merely bureaucratic inconveniences; they directly affect the quality of the meals students ultimately receive. When schools are forced to substitute ingredients or rely on pre-packaged items due to supply chain disruptions, the freshness, palatability, and nutritional quality of meals can decline. This observation emerged from the English UIFSM program, in which caregivers noted a “substantial decline in quality and variety” of meals served following the initial COVID-19 lockdown, a factor that subsequently influenced their choice to adopt packed lunches (Davies et al., 2023).

The viewpoints of primary consumers, namely students, yield crucial insights into the reasons why operational difficulties can result in programmatic failures. A series of qualitative studies conducted in California under the universal meal waivers identified a consistent gap between students’ hopes for school lunch and their actual experience. Although students valued the improved access and financial relief brought by universal meals, they regularly criticized the quality and quantity of the food (Orta-Aleman et al., 2024). According to many students, the main entrees were perceived as the least healthy and fresh component of the meal, being labeled as “prepackaged” or “frozen” (Chelius et al., 2025). The authors defined ‘fresh’ as food prepared from scratch on-site and ‘healthy’ as food containing fruits and vegetables, yet they observed that the fruits and vegetables were ‘not always fresh or palatable’ (Chelius et al., 2025). This perception matters, as a cross-sectional study of over 2,000 students determined that favorable views of school lunch namely its taste, healthfulness, variety, and familiarity were strongly linked to higher self-reported participation (Zuercher et al., 2026). When students dislike what is available, they may opt not to eat, which results in elevated plate waste and reduced nutritional benefits (Orta-Aleman et al., 2024). In South Los Angeles, adolescents cited lengthy cafeteria queues, limited time, and insufficient options as primary obstacles, which led them to bypass the lunch line entirely and obtain food from off-campus vendors (Payán et al., 2017). These data suggest that simply offering meals at no cost is insufficient; the meals must be appealing, fresh, and perceived as high-quality to guarantee that increased access translates into increased consumption.



The contribution of parents and other interested parties carries equal weight. Across multiple studies, parents expressed overwhelming support for universal free meal policies, particularly for their role in reducing financial burden and household stress. In Arizona, 97% of parents supported the pandemic-era universal meals program, and 95% supported making it permanent (Martinelli et al., 2024). In Massachusetts, roughly 75% of parents across all income brackets agreed school meals should be free for all children, and parents from households eligible for free or reduced-price meals were much more likely to report their ability to have enough food for their family would be harmed if the policy ended (Cohen et al., 2024). However, parent engagement can also pose challenges. The shift to packed lunches during the pandemic in England was not motivated by safety concerns, contrary to popular belief, but by a conjunction of school policy changes (schools advising parents to bring packed lunches) and perceptions of declining meal quality (Davies et al., 2023). This finding underscores the importance of clear communication between schools and families about program offerings, in addition to the necessity for schools to uphold high standards of food quality to retain trust.

Operational challenges also extend beyond the cafeteria to the broader school infrastructure. An investigation of a school engaged in the Community Eligibility Provision (CEP) in Virginia applied the SOAR (Strengths, Opportunities, Aspirations, Results) framework to assess the lunch environment (Smith, 2023). Stakeholders, such as cafeteria monitors, teachers, and administrators, identified key strengths, including mandatory quiet time at the start of lunch to encourage eating, and verbal cues to help students manage their time (Smith, 2023). Nonetheless, they pinpointed avenues for refinement, such as supplying students and staff with high-quality photographs and thorough explanations of menu items, conducting taste tests, and extending the total duration assigned for lunch (Smith, 2023). Achieving an extended lunchtime period for children is not a simple task; evidence indicates that sufficient eating time is critical for children to consume adequate food, which could help address food insecurity concerns and improve dietary quality (Smith, 2023).

The pandemic acted as a stimulus for innovation, compelling schools to rapidly adjust their meal service models. The USDA waivers extending operational hours and permitting multi-meal distribution (e.g., grab-and-go) were positively correlated with summer meal participation in Connecticut (Bennett et al., 2023). In New Orleans, the decentralized charter school system, though posing difficulties for citywide coordination, also presented possibilities for adaptability and ingenuity via novel collaborations between schools and community organizations (Knapp et al., 2024). These adaptations, developed from necessity, constitute a “road map for best practices” for future emergency readiness and the ongoing betterment of school meal programs (Connolly et al., 2021).

Financial sustainability remains a persistent concern for school food authorities. Although universal programs boost participation and, in many instances, revenue, they additionally introduce fresh expenses. School food authorities in both Maine and California reported concerns about higher costs for food and labor, the financial viability of the program, and the administrative burden of keeping compliance without the ‘buffer’ of paid meal revenue (Zuercher, Orta-Aleman, et al., 2024) (Cohen et al., 2022). In California, state funding and increased federal reimbursement were identified as the top facilitators, but administrative burden was still a challenge for 75% of districts, particularly for those with a lower proportion of students eligible for free meals (Zuercher, Orta-Aleman, et al., 2024). The nature of the trade-off is evident: universal programs have the capacity to broaden access and diminish stigma, yet they depend on consistent and sufficient financing to preserve food quality, staff remuneration, and operational effectiveness.



Ultimately, the matter of outstanding meal charges and the practice of stigmatizing students for unpaid balances has become a prominent topic in news coverage, especially within school systems that depend on income-based assessment programs. An analysis of news stories from 46 states found that the practices of denying meals to students with negative balances, affixing stamps to their hands, or requiring them to perform chores to pay off the debt were widely reported and criticized (Spruance et al., 2021). The study concluded that “many issues surrounding unpaid meals could be resolved by universal no-cost meals” (Spruance et al., 2021). This conclusion corresponds with the broader evidence indicating that universal programs improve nutritional access and foster a more dignified and equitable school atmosphere.

6. Educational, Developmental, and Behavioural Outcomes

The justification for free school meal programs goes beyond immediate nutritional advantages to encompass wider educational and developmental objectives, grounded in the hypothesis that improved nutrition boosts cognitive function, school engagement, and behaviour. A substantial body of evidence has examined these connections, and the results are generally positive but differ in magnitude depending on the outcomes, student subgroups, and program structures.

One of the most consistently documented associations is between the availability of free school meals and improvements in academic achievement. A seminal Swedish investigation, assessing a program that supplied cost-free nutritious school meals to all children from 1959 to 1969, determined that participation in the program for the entire primary school period correlated with a 3% rise in lifetime earnings, and this effect was more pronounced for pupils who were younger at the start of exposure and those from disadvantaged backgrounds (Lundborg et al., 2022). This long-term economic benefit was partly explained by substantial improvements in educational attainment, a result that offers strong evidence for the lasting impact of early-life nutrition on human capital development.

A quasi-experimental investigation of the Community Eligibility Provision (CEP) in the United States indicated that its expansion could aid students via improved academic performance and decreased disciplinary incidents (Gutierrez, 2025). Employing state mandates as a source of identifying variation, an analysis of the School Breakfast Program (SBP) likewise discovered that program availability raises student achievement (Frisvold, 2014). A study assessing the effect of healthier school meal suppliers in California public schools indicated that pupils at schools that contracted with a healthy supplier achieved higher scores on state achievement tests; these gains were small in size but achieved at a minimal expense (Anderson et al., 2018).

One notably rigorous examination of the New York City Universal Free Meals (UFM) program yields detailed effect estimates (A. Schwartz & Rothbart, 2020). Employing a difference-in-difference approach and student-level longitudinal data, the study determined that UFM raised academic performance by up to 0.059 standard deviations in math and 0.083 in English Language Arts for non-poor students, with smaller yet still statistically notable effects of 0.032 and 0.027 standard deviations for poor students (A. Schwartz & Rothbart, 2020). The study further employed UFM implementation as an instrumental variable to estimate the causal effect of school lunch participation per se, and it was determined that an additional lunch every two weeks raised test scores by approximately 0.08 standard deviations in math and 0.07 in English Language Arts (A. Schwartz & Rothbart, 2020). These effect sizes, while modest, are comparable to the impacts of other educational interventions and are achieved at a fraction of the cost.



The mechanisms linking school meals to achievement appear to operate through improvements in both attendance and classroom behaviour. An investigation of the School Breakfast Program within Wisconsin elementary schools indicated that the program's adoption correlated with a 3.5-percentage-point decline for the proportion of students exhibiting low attendance and a 0.08 standard deviation improvement in reading scores among likely-participant boys (Bartfeld et al., 2019). Making breakfast accessible at no cost to all pupils was linked to a more pronounced 3.5-percentage-point decline in low attendance and gains in math (0.07 SD) and reading (0.04 SD) scores among the higher-income sample (Bartfeld et al., 2019). Research on the relationship between meal program structure and attendance has also examined the role of meal location. Using nationally representative data from the Early Childhood Longitudinal Study, one study found that relocating breakfast from the cafeteria to the classroom reduced student absenteeism and lowered the probability of chronic absenteeism, and these effects were consistent across all student and school demographics (Gottfried & Kirksey, 2022).

How free meals shape disciplinary outcomes has been a particular focus of recent research. The idea behind this association is that the decreased stigmatization from universal meals fosters a better school social atmosphere and diminishes behavioral issues driven by food insecurity. A series of studies have tested this hypothesis. An analysis of Oregon public schools drawing on linked educational and administrative records indicated that CEP had protective effects on the probability of suspension for students in participating schools, especially for those from low-income families, those who received free or reduced-price meals before CEP implementation, and Hispanic students (Domina et al., 2024). A national investigation capitalizing on the phased implementation of CEP among states found it decreased suspension rates for elementary and middle school students, but not high school students, and these decreases were concentrated in regions with higher estimated child food insecurity (Gordon & Ruffini, 2018). A supplementary analysis of the same national dataset indicated schoolwide free meals lowered suspensions by roughly 17% for white male elementary students, yet the results for black students were not statistically meaningful, although the authors could not exclude the possibility of identical treatment effects across the two groups (Gordon & Ruffini, 2019).

Beyond these positive findings, a limited number of studies have yielded more nuanced or cautionary results. The quasi-experimental evaluation of the universal free school meals pilot in two English secondary schools found no effect of the intervention on quantitative measures of hunger or food insecurity, despite qualitative reports from students, families, and staff of perceived positive impact on these outcomes as well as on school performance and family stress (Carlisle et al., 2023). This disparity underscores the difficulty of assessing these concepts and the capacity of qualitative approaches to capture advantages that are not readily quantifiable. In the South Korean setting, an examination of the Free School Meal Program (FSMP) determined that it decreased the proportion of students attaining high fitness grades by as much as 1.5% of the student body, and evidence indicates that this program may displace investments in student physical education, thus harming student fitness (Baek et al., 2019). This finding underscores the critical importance of considering the full range of resource allocation decisions within schools when evaluating the impacts of free meal policies. The CEP literature further indicates the susceptibility of these earnings. An analysis of schools that chose CEP and later withdrew from it found that students had more absences when the program was discontinued, a consequence driven largely by economically disadvantaged students (R. Davis, 2022), which implies that the advantages of universal meals are not sustained without ongoing programming.



The relationship between free meals and educational attainment is also modified by the social context. A study of South Korean middle school students, which employed a sparse optimal matching method within a multilevel growth framework, discovered that free school lunch status did not have a notable net impact on students' average educational achievements or growth rate during middle school (Yu et al., 2019). Educational achievement was, however, strongly shaped by the interaction of free school lunch status and the school-level proportion of free lunch recipients, such that a stigma effect occurred among students in schools where a small share of pupils received free lunch (Yu et al., 2019). This indicates that in contexts where universal access is not standard, the very focus of the program can generate a stigmatized social identity that compromises the intended academic gains.

Some experiments have produced null findings. An experimental evaluation of two popular policy innovations to increase access to the school breakfast program found little evidence of overall improvements in child health, behaviour, or achievement (Schanzenbach et al., 2014). This outcome may stem from the experimental intervention raising attendance while leaving the calorie or nutrient composition of meals unchanged (since consumption moved from home to school), thus failing to affect the cognitive and behavioral routes connecting diet to scholastic achievement.

The evidence for positive behavioural outcomes is further supported by research on student discipline. An investigation of the Community Eligibility Provision indicated CEP exerts protective effects on the probability of suspension for students in participating schools, especially for students from low-income families, students who received free or reduced-price meals prior to CEP implementation, and Hispanic students (Domina et al., 2024). A separate national analysis exploiting the staggered rollout of CEP across states determined that schoolwide free meals decreased suspension rates among elementary and middle school students, but not high school students, and these decreases were focused in areas with higher estimated child food insecurity (Gordon & Ruffini, 2018). For younger students, the largest suspension declines occurred in regions with the highest need, aligning with the view that these outcomes stem from better food security and less stigma-related stress.

A comprehensive overview of the evidence on the relationship between free school meals and educational, developmental, and behavioural outcomes is presented in Table 5.

Table 5. Educational, developmental, and behavioural outcomes

This systematic review synthesizes a broad and heterogeneous body of evidence on the impacts and implementation of free meal policies in developed countries. Taken together, the reviewed studies present a coherent conclusion: universal free meal models are considerably more effective than targeted, means-tested approaches in boosting program participation, decreasing stigma, and lessening the economic strain on households. This finding is robust, appearing across diverse national contexts such as the United States, England, South Korea, and New Zealand, and is corroborated by both large-scale quantitative evaluations and qualitative accounts from students, parents, and school staff. The rise in participation does not simply reflect a change in administrative categorization; it constitutes a genuine broadening of the program's scope to encompass students from households just above the poverty line, the so-called 'near-



poor', who are often the most susceptible to food insecurity yet are excluded from targeted initiatives. This pattern consistently found across the literature underscores a central equity advantage of universal provision.

However, the translation of this increased participation into improved nutritional outcomes is far more equivocal. Although there is broad agreement that the nutritional quality of meals prepared according to current standards exceeds that of homemade packed lunches, actual eating behaviors often fail to meet dietary recommendations. The plate waste studies examined in this review indicate a critical discrepancy between the quantities served and consumed, especially for essential nutrients such as calcium, iron, and fiber, whereas sodium intake remains consistently elevated. This indicates that the policy's capacity to improve dietary quality depends not only on the nutritional standards of the meal itself but also on its tastiness, its attractiveness to students, and the environmental circumstances in which it is eaten. The implication is clear: nutrition standards alone are insufficient. Critical mediators, including menu design, food preparation methods, the duration of the lunch period, and the broader school food environment, can either amplify or nullify the intended nutritional benefits.

A similar nuance emerges in the evidence linking free meals to educational and behavioural outcomes. The investigations with the highest methodological rigor, especially those employing quasi-experimental approaches such as difference-in-differences and instrumental variables, consistently indicate beneficial outcomes for academic performance, attendance, and decreased disciplinary incidents. The effect sizes, though modest, are meaningful at scale and often greatest for the most disadvantaged students, which is consistent with the theoretical framework that improved nutrition and reduced stigma boost cognitive function and school engagement. Yet this relationship is not automatic. The South Korean experience, where a universal meal program was found to crowd out physical education funding and negatively impact fitness, serves as a critical cautionary tale. This indicates that school meal policies function within a zero-sum budget framework, where advantages for one program may be gained at the expense of another. Similarly, the finding that the educational advantages of free meals depend on the social environment, where stigma effects appear in schools where only a minority of students receive free meals, reinforces the idea that the mechanism of action is as social (reduction of stigma) as it is nutritional.

The theoretical contributions of this review are therefore twofold. First, it delivers a cohesive structure that transcends a simplistic "does it work?" inquiry. An evaluation was conducted to comprehend the conditional mechanisms governing policy effectiveness. The route from policy to health and educational outcomes is influenced by a sequence of elements: enrollment rates, meal quality, student intake, and the overall school atmosphere. Universal provision boosts participation, yet the subsequent effect on nutrition and learning hinges on whether schools can deliver meals that are both nourishing and appetizing, whether they can arrange sufficient time and a supportive atmosphere for eating, and whether they can sustain investments in other critical domains such as physical education. Second, the review highlights the central, often overlooked, role of stigma as a mechanism. The qualitative evidence consistently identifies the reduction of stigma as one of the most valued outcomes by students and parents. This is not purely a psychological advantage; it is a structural one that eliminates a hindrance to engagement and, by enhancing the social atmosphere of the dining area, could contribute to the documented decreases in behavioral issues.

On a practical level, these results deliver unambiguous direction for those responsible for policy formulation. Universal free school meals are a justified policy direction on grounds of equity and participation, but this justification is conditional. Without sustained investment in high-quality, fresh, and appealing food,



and in the staffing and infrastructure needed to prepare and serve it, the promise of universal meals will go only partway. Policymakers must guarantee that the operational challenges documented here, particularly supply chain vulnerabilities and staffing shortages, are resolved by means of sufficient financial resources and technical assistance. Furthermore, the meal service model matters. Evidence indicates that breakfast in the classroom and grab-and-go models can increase participation more than traditional cafeteria models, yet the effects of these models on food quality and the social experience of eating merit further investigation. Ultimately, the risk of adverse side effects, including the displacement of physical exercise or other health-promoting activities, necessitates that school meal policies be implemented as part of a comprehensive, unified school health approach rather than as a standalone measure.

7. Limitations

It is necessary to acknowledge certain limitations of this review. First, the restriction to English-language publications may have excluded valuable evidence from non-English-speaking developed countries, particularly in Europe and Asia, thereby skewing the findings toward the experiences of the United States, the United Kingdom, and other Anglophone nations. Second, the heterogeneity in outcome measures across the included studies, while necessitating a narrative synthesis, may have led to a more subjective interpretation. Because a systematic meta-analysis was not conducted, we are unable to present a combined numerical estimate of the total impact of universal free meals on any given outcome. Third, there may be a publication bias, because investigations reporting null or negative outcomes are less likely to be accepted for publication than those yielding positive results. Although we included some null findings from large-scale experimental and quasi-experimental studies, the grey literature was excluded, which may have contained important reports from policy evaluations with non-significant results. Fourth, our quality assessment, while systematic, was applied to studies of variable design, and the inherent subjectivity of assessing study quality may have influenced the weight given to certain findings. Finally, we must concede that our search strategy, although exhaustive, might have omitted studies not employing the specific keywords we selected, particularly those from non-scholarly sources or reports adopting alternative terminology for 'free meals,' such as 'subsidized meals' or 'no-cost meals.'

8. Future Research

The gaps and inconsistencies uncovered in this review point to clear directions for future research. There is an urgent requirement for long-term investigations that monitor the effects of universal no-cost meal programs on health outcomes, especially obesity and diet-related illness, over many years and into adult life. The current evidence base is dominated by cross-sectional and short-term quasi-experimental designs; long-term data are necessary to understand whether the modest improvements in dietary quality observed in the short term translate into meaningful reductions in chronic disease risk. Future research should also explore the mechanisms of impact more directly. For instance, investigations could employ within-school random assignment of varied meal service approaches (e.g., cafeteria versus grab-and-go) to separate the impacts of the meal itself from the setting in which it is consumed. Under-researched domains include the effects on students' mental health and psychosocial well-being, as well as the function of school meals in reducing household food insecurity a critical route that is often captured only via qualitative approaches or indirect metrics. Future work should also examine the cost-effectiveness of universal meal programs from a societal



perspective, taking into account not only the direct costs of food service but also the potential savings from reduced healthcare expenditures and improved educational attainment. There is also a clear need for more rigorous evidence from developed countries beyond the Anglosphere, particularly from nations in continental Europe and Asia, where school meal systems and social contexts are distinct. Finally, as policies change, future research should examine the potential for unintended consequences, such as the crowding-out of physical activity or the impact of universal meals on the local food economy and school budgets.

CONCLUSION

This systematic review synthesized evidence on the impacts and implementation of free meal policies in developed countries across participation, socioeconomic equity, nutritional intake, educational outcomes, and program implementation. The findings indicate that universal free meal programs consistently increase participation, reduce stigma associated with means-tested provision, and alleviate financial pressures on households. However, increased participation does not automatically result in improved nutritional intake, as outcomes are influenced by meal quality, palatability, menu design, student preferences, available eating time, and the broader school food environment. Evidence on educational, developmental, and behavioural outcomes generally indicates modest positive effects, particularly among younger and disadvantaged students, although these effects vary across contexts and program designs.

Overall, the findings demonstrate that the outcomes of universal free school meal policies depend not only on universal access but also on the quality and implementation of the program. Sustained attention to nutritious and appealing meals, adequate staffing and infrastructure, appropriate service models, and supportive school environments is therefore important to maximize the nutritional, educational, and social benefits of these programs. These findings also highlight the need for further longitudinal and context-specific research to strengthen understanding of the long-term effects and implementation conditions of universal free school meal policies.

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