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Advancing and implementing nutrition knowledge to improve health, wellbeing and society

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Meal Kits Can They Deliver?

Innovations in the way consumers buy and prepare their food may increase access to affordable, healthy food and could contribute to improving personal and public health. Meal kits, comprised of boxes containing pre-portioned ingredients and recipe instructions delivered to your door, are an increasingly popular innovation and have the potential to bring physical, mental and environmental health benefits. The last decade has seen remarkable growth in production and popularity, creating what is now a multi-billion-dollar industry, with tens of millions of customers ordering boxes each year.^{1,2} As an interdisciplinary global think-tank focused on addressing inequalities and malnutrition, NNEdPro supports the investigation and implementation of effective and topical solutions in nutrition and health. This review will therefore dissect the growing body of research on meal kits to understand their potential benefits, barriers to implementation, and pathways forward.

The promise of meal kits

Time saving: Time constraints are often cited as a barrier to healthy eating.³ Meal kits are frequently advertised as time-saving solutions, a claim that is supported by a number of publications.^{4,5} As providers offer a pre-determined list of meals to select from, the process of selecting meals is made easier and faster, hence meal kits have been reported to reduce mental load through reduced food-related decision making.⁶ Ingredients are then delivered directly to the consumer's door, eliminating the need for regular supermarket trips. Finally, time is saved when cooking due to pre-portioned, and sometimes partially prepared, ingredients.

Increased variety: Dietary variety is a keystone feature of a healthy diet and may contribute to increased mealtime enjoyment.⁷ Through simplifying the process of choosing and preparing meals, the meal kit model reduces barriers to eating a wider variety of meals, allowing consumers to try new and unfamiliar recipes, afforded by the diverse range of recipes offered by providers.⁸ Consequently, the opportunity to try new foods is frequently reported as a benefit.^{5,9}

Develop kitchen skills: Skills related to purchasing, preparing and cooking foods play an important role in helping someone eat a

healthy, well-balanced diet.¹⁰ By simplifying the planning, preparation, and cooking stages, meal kits create an environment where new skills and techniques can be more easily and safely practiced, which can build self-efficacy.¹¹ When given a meal kit, young adults have been shown to develop their cooking agency; their ability to plan, procure and prepare their food.¹² Meal kits may therefore represent an effective pathway for food-related skill development. This is supported by our pedagogical research findings from the NNEdPro Mobile Teaching Kitchen (MTK) initiative.¹³

Improve the cooking experience: Meal kit providers aim to bring restaurant-quality, gourmet-type foods to consumer kitchens and inspire experiential cooking at home. Evidence suggests that the use of meal kits can contribute to increased enjoyment of cooking, and the popularity of meal kits, particularly among younger consumers, may relate to such experiences offered by meal kits without spending extra money eating at restaurants.^{5,14,15} Additionally, benefits including enhanced family participation in meal preparation and improved relationships have been reported following the use of meal kits.^{6,9,16} Thus, meal kits may offer mental and social health benefits by supporting increased engagement in home cooking by partners, friends, and families.



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Caters to dietary needs: The streamlined meal selection process means that individuals with dietary requirements and preferences can easily select for meals meeting their needs. For example, meal kit producers offer keto, lower-carb, gluten-free, vegan and vegetarian options.¹⁶

Healthy: The benefits so far relate to making food purchasing and preparation faster, easier, and more enjoyable. While these are important tools in helping people eat a healthier diet, the meals themselves must be health-promoting. A review of recipes offered by a meal kit provider compared the nutritional composition of meals with national dietary standards.¹⁸ The 251 unique meals studied were found to be relatively high in energy from fat and protein, while low in energy from carbohydrates, and some meals exceeded the recommended dietary target for sodium. Overall, meals possessed health promoting qualities, frequently including vegetables, however, improvements could be made. Meal kits may also improve dietary quality by facilitating the use of appropriate portion sizes. Finally, the majority of the UK population do not meet national dietary guidelines, therefore targeting more widely consumed meal kits could provide an opportunity for improving diet quality.¹⁹

Challenges and opportunities

Cost: Cost is frequently reported as a primary consideration when food shopping, and meal kits are no exception.²⁰ Meal kits provide a cheaper way to consume restaurant-quality meals, however, they remain a more expensive option compared to grocery shopping. Consequently, consumers purchasing meal kits tend to have a degree, a full-time job, and be from a high-income household.²¹ A study evaluating willingness to pay for meal kits after a six-week intervention in low-income households revealed that participants would be willing to pay more than the price of the cheapest nationally available meal kit in the US, but less than the price of the nation's most popular meal kits.⁵ This reiterates that most services are priced too highly for consumers in lower-income households. However, as meal kits overcome a number of barriers reported by low-income households, and as such individuals showed interest in purchasing meal kits post intervention, low-income families may be a promising audience for affordable meal kits. One opportunity for this is the integration of meal kits into existing nutrition programmes, such as food banks,

voucher schemes, and innovations such as the MTK initiative by NNEdPro. For example, meal kits may supplement culinary training through MTK models, allowing a 'training' period for participants to put their new food purchase, preparation and consumption tips into practice before buying the food direct themselves once habits are engrained.

Culturally appropriate: Recipe preferences for meal kits differ depending on cultural and ethnic background, suggesting that the development of culturally and ethnically inclusive dishes may be important for producers.²⁰ Additionally, research has identified that meal kits may be a new concept for minority audiences, and that consumer education prior to implementation may be valuable. It has also been argued that attempts by popular meal kit providers to be inclusive of multicultural practices have not delivered on this inclusivity and have instead simply presented, adapted and decontextualised these ingredients, recipes and experiences.²²

Environmental impact: Innovations that are resilient to environmental disruption, while simultaneously supporting a more sustainable food system, are necessary in our changing climate. Bypassing traditional retail pathways can shorten supply chains, affording greater transparency and efficiency for meal kit developers, which can lead to significant reductions in food wastage, and may increase resilience against environmental disruption.²³ Taking into account the production, packaging, transport, and associated waste, one study revealed that grocery meal greenhouse gas emissions are 33% higher than equivalent meal kits.²⁴ Packaging emissions are higher, but these are offset by reduced emissions from streamlined supply chains, reduced food waste, and lower last-mile transportation.

Moving forward

The idea of pre-portioned ingredients in a box being home-delivered is far from complex, yet it is one that may be powerful in overcoming barriers to healthy home-cooking. Harnessing this model's benefits and maximising them for a wide range of audiences will require the development of appealing, price-appropriate, and culturally relevant products. Targeted, collaborative efforts investigating the implementation of meal kits into new and existing schemes are of interest to the NNEdPro vision of tackling malnutrition in all its forms starting with primary prevention, and may contribute to improving dietary quality, and ultimately benefit personal and public health.

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