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THE DOUBLE BURDEN OF MALNUTRITION:
DO WE KNOW THE IMPACT OF OBESITY INTERVENTIONS
ON UNDERNUTRITION?

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THE DOUBLE BURDEN OF MALNUTRITION: DO WE KNOW THE IMPACT OF OBESITY INTERVENTIONS ON UNDERNUTRITION?

Summary

After periods of progress, prevalence of undernutrition has been increasing in many low- and middle-income countries (LMICs) since 2015. At the same time, with an increase of obesity rates a second burden has been imposed on people living in LMICs. Many common drivers of both forms of malnutrition led to a double-duty call for action to fight undernutrition and obesity simultaneously and with combined resources. The joint effort is of utmost importance, more than ever in light of increasing food insecurity and poverty caused by the COVID pandemic. However, studies of the growing body of obesity interventions have not thoroughly incorporated an impact evaluation of undernutrition, and a comprehensive literature review is missing. To systematically review obesity interventions in LMICs, main relevant databases have been used. We found that deliberate attention to undernutrition is yet rare which calls for a continuous emphasis of the double duty focus shift.

Keywords

Double burden of malnutrition, obesity intervention, undernutrition, double-duty call for action, LMIC

1 Problem Statement

Today, globally 2 billion people are suffering from severe and moderate *hunger* (FAO 2020) and 2 billion people are affected by *overweight and obesity*, with almost all of undernourished and 70 % of overweight people living in low- and middle-income countries (LMICs) (SHEKAR a. POPKIN 2020). Obesity and undernutrition occur jointly within regions and households, and even the same individual can be affected by both disorders in different stages of life – referred to by the literature as the double burden of malnutrition (DBM). The absolute number of people suffering from severe hunger slowly increased again since 2015 after a period of decline (FAO et al. 2019), and obesity rates are heavily increasing. The COVID-19 crisis worsens the situation further with protracting economic losses worldwide hurting especially the most vulnerable, exacerbating poverty, hunger, and nutrition choices (WFP 2020).

Ending hunger and any other form of malnutrition and ensuring access to nutritious food for all people by 2030 is the second of the *Sustainable Development Goals* (SDG) (UN 2015). Current statistics and developments suggest that achieving the second SDG by 2030 is highly improbable unless the efforts of the global community are considerably increased. Lacking recognition and commitment to tackling the roots of world hunger and obesity is causing intolerable social, environmental and economic costs, thus depriving individuals and societies of their basic rights and free development, and irreversibly harming the environment (BRANCA et al. 2020; WILLETT et al. 2019).

Undernutrition and obesity can have many different causes but also share some common drivers that broadly can be categorized into *socioeconomic status* (especially income and education greatly affect people's nutrition choices, see e.g. POPKIN et al. 2020), *food environment* (uncertain access to sufficient, safe and nutritious food forces people to reduce quantity and/or quality of food intake, see FAO et al. 2018) and *biological factors* (including epigenetics and

early-life nutrition leading to detrimental metabolic adaptations, see e.g. HAWKES et al. 2020). Calls for *double-duty actions* therefore advice to reduce all forms of malnutrition more efficiently by using holistic instead of isolated approaches where measures aimed at achieving one goal run the risk of simultaneously harm another (HAWKES et al. 2017; IFPRI 2015; NUGENT et al. 2020; TZIOUMIS a. ADAIR 2014; WHO 2017; NCD-RISC 2017).

The topic is of the utmost importance, however, until now there is no comprehensive literature review available that examines whether obesity interventions also incorporate an impact evaluation of undernutrition.

2 Research Question and Objective

According to the double-duty call for action, efforts aimed at mitigating the obesity problem and efforts aimed at reducing undernutrition in LMICs should not negatively interfere with each other. Against this background, the goal of this review is to give an overview of how (or if) current analyses of obesity interventions (“treatments”) include not solely the effects on *obesity* indicators but also on *undernutrition* indicators. The research question we are looking to shed light onto is: how do obesity interventions in LMICs affect prevalence of undernutrition?

3 Methods and Data

A scoping literature review is being conducted, given the heterogeneous nature of identified studies. Databases searched are PubMed, Cochrane Library, CINAHL and WHO Global Index Medicus (including LILACS, AIM, WPIRM, IMSEAR, IMEMR), using three sets of search phrases: (a) obesity + synonyms; (b) intervention + synonyms; (c) developing country + synonyms + DBM countries according to POPKIN et al. 2020. No restrictions concerning study type or participants are included; the study is limited to results in English language and the time period 2015–2021. Screening of titles, abstracts, and full-texts and final determination of eligibility and inclusion of papers have been conducted by one researcher (see Figure 1 for study selection process).

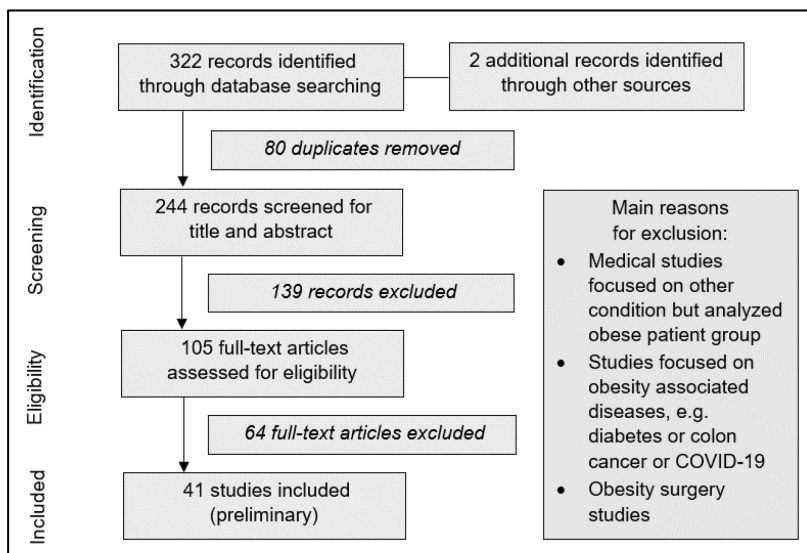


Figure 1: Flow diagram of study selection process, adapted from PRISMA-Statement

4 Preliminary results

Only few studies of interventions explicitly target the DBM. Some obesity interventions do not clearly mention a double duty focus but in fact do tackle both burdens (e.g. school programs with free fresh local fruits and vegetables). Few evaluations of obesity interventions also address undernutrition outcomes. The scoping review shows the demand for a continuous emphasis of the double duty call for action on the DBM. Not only policy makers but researchers

are called upon to incorporate both obesity and undernutrition outcomes into their evaluation process.

The scope of the studies comprises individual, household, school/community-based, and regional/national. Target groups are children, adolescents and adults; more specific groups included e.g. parents, teachers, and mothers. Study regions are predominantly India, Malaysia, Mexico, Philippines, and South Africa. The types of interventions are manifold, mainly though nutrition education and physical activity. Therewith, different indicators were used, but mostly include BMI (z-score) and other anthropometric variables. Most studies of obesity interventions do neither include indicators of undernutrition or micronutrient deficiencies, some only indirectly, nor information on their double-duty potential

It is important to bring the holistic nature of malnutrition into the agenda of research and policy design. According to the double-duty call for action, the evaluation of undernutrition development has to be included into obesity intervention design as well as policy impact evaluations. If the focus on undernutrition/deficiencies is not in the intervention program, (a) studies should evaluate them anyhow, if possible, (b) indicate the program's unrealized double-duty potential or (c) the unfeasibility for double-duty.

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