

Nutrition policy reforms to address the double burden of malnutrition in Zambia: a prospective policy analysis

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Abstract

The evolution of nutrition patterns in Zambia has resulted in the coexistence of undernutrition and overnutrition in the same population, the double burden of malnutrition. While Zambia has strong policies addressing undernutrition and stunting, these do not adequately address food environment drivers of the double burden of malnutrition and the adolescent age group and hence the need for nutrition policy reforms. We conducted a theory-based qualitative prospective policy analysis involving in-depth interviews with nutrition policy stakeholders and policy document review to examine the feasibility of introducing nutrition policy options that address the double burden of malnutrition among adolescents to identify barriers and facilitators to such policy reforms. Using the multiple streams theory, we categorized the barriers and facilitators to prospective policy reforms into those related to the problem, policy solutions and politics stream. The use of a life-course approach in nutrition programming could facilitate policy reforms, as adolescence is one of the critical invention points in a person's lifecycle. Another key facilitator of policy reform was the availability of institutional infrastructure that could be leveraged to deliver adolescent-focused policies. However, the lack of evidence on the burden and long-term impacts of adolescent nutrition problems, the food industry's strong influence over governments' policy agenda setting and the lack of public awareness to demand better nutrition were perceived as critical barriers to policy reforms. In addition, the use of the individual responsibility framing for nutrition problems was dominant among stakeholders. As a result, stakeholders did not perceive legislative nutrition policy options that effectively address food environment drivers of the double burden of malnutrition to be feasible for the Zambian context. Policy entrepreneurs are required to broker policy reforms that will get legislative policy options on the government's agenda as they can help raise public support and re-engineer the framing of nutrition problems and their solutions in Zambia.

Keywords: Policy analysis, food environments, policy reforms, double burden of malnutrition, adolescents

Key messages

- Addressing nutrition problems in adolescents was not perceived as a priority; however, there was a general acknowledgement that this age group requires to be prioritized.
- Regulating the marketing of unhealthy food and beverages to children as a policy option was perceived as not for the Zambian context, while healthy food provisioning in schools was perceived feasible.
- Manufacturing companies were perceived as having strong influence and interest to challenge legislative policy reforms.

Introduction

The nutrition problem landscape in Zambia has evolved from predominately undernutrition-related issues to include

overweight and obesity and diet-related chronic conditions like diabetes and hypertension (Harris, 2019). This coexistence of undernutrition and overnutrition in the same population is termed the double burden of malnutrition (Popkin *et al.*, 2019). Latest estimates indicate that 35% of children under 2 years are stunted, while 5% of children under 5 years are overweight or obese (Central Statistical Office, Ministry of Health and ICF, 2019). In the adult population, 24% are overweight, while 90% do not meet the dietary requirement of consuming five portions of fruit and vegetables daily (Mutale and Chilengi, 2018). Recent studies in the adolescent age group show that the snacking dietary pattern characterized by consuming processed food high in sugar, salt and fats is prevalent among urban school-going adolescents (Mukano *et al.*, 2022). However, Zambia's nutrition policies need to change more rapidly to address the development of new challenges associated with the nutrition transition.

The nutrition transition and the associated double burden of malnutrition being experienced in Zambia have food

system drivers. The undernutrition component has been linked to agriculture policies that perpetuate the Zambian diet's lack of diversity (Mwanamwenge and Harris, 2017). Liberalized economic systems and globalization have contributed to the increased availability and affordability of processed, energy-dense foods (Harris, 2019). Nutrition problems are predominately framed as related to behavioural factors, and legislative interventions addressing food environment drivers are lacking (Mukanu *et al.*, 2020). In addition, although the adolescent age group has been identified as a 'second window of opportunity' for preventing adverse nutrition-related problems later in life (Patton *et al.*, 2022), little attention is paid to this population group in Zambia, despite being exposed to unhealthy food environments that foster unhealthy diets (Mukanu *et al.*, 2022). While Zambia has strong policies addressing undernutrition and stunting (National Food and Nutrition Commission, 2018), these do not adequately tackle food environment drivers of the double burden of malnutrition and hence the need for nutrition policy reforms.

Policy reform is an inherently political process that aims to change 'the rules of the game' by challenging the status quo, often aiming to improve the status of vulnerable groups by redistributing access to finite resources to address a problem or achieve a goal (Reich, 1995). Thus, policy reforms attract the interest of stakeholders who will likely benefit from maintaining the status quo or the change promised by reforms. The reforming policy involves using persuasive tactics to re-engineer how stakeholders perceive problems and their solutions to facilitate (or block) a status quo change. Evidence characterizing the extent and intensity of a problem and its associated outcomes is one of the tools used to push for policy reforms. However, while important, evidence is not the only determinant of policy reform. Political science theories explain how social and political factors also influence policy reforms. For instance, institutions (government structures, policy networks and policy legacies) and interests (agendas of societal groups, elected officials, civil servants, researchers and policy entrepreneurs) can shape the ideas (what is known about the problem) about a policy issue and influence the policy options considered legitimate to address that particular issue (Shearer *et al.*, 2016).

Policy actors (participants who impact and are impacted by policy processes) are central to policy reforms (Buse *et al.*, 2012). Actor interests are reflected in frames they adopt to understand and communicate a policy 'problem' (policy narratives), influencing the solutions they likely support (Koduah *et al.*, 2016). Frames are 'distinct and coherent interpretations of an issue containing a problem definition, casual attributions and recommended prescriptions' (Van Hulst and Yanow, 2016). Policy actors also carry power often associated with institutions and policy networks they are part of. Scholars have shown that with this power, actors can garner support and build policy networks with like-minded actors to influence policy direction in ways that protect and favour their interests as a group (Shearer *et al.*, 2016).

Nutrition policy reforms attract the interests of various actors as nutrition problems are complex and have political, economic and health dimensions (Balarajan and Reich, 2016). For example, food industry actors have emerged as powerful and highly interested in nutrition policy development across the globe, with the growing recognition of the role

of 'commercial determinants of health' in poor nutrition (Kickbusch *et al.*, 2016; Mialon, 2020). The financial resources and enabling liberalized economic systems give the food industry power to influence policy development and protect their interests through corporate political activities such as lobbying and corporate social responsibility (Mialon *et al.*, 2015). Policy actors from economic government sectors are also highly interested in nutrition policy reforms. In developing countries, for instance, most governments have prioritized economic growth often by encouraging foreign direct investments, which results in the proliferation of industries for unhealthy commodities like food and alcohol (Schram *et al.*, 2015; Baker *et al.*, 2016; Friel and Jamieson, 2019).

Zambia requires nutrition policy reforms where, among others, effective legislative policy options for addressing food environment drivers of the double burden of malnutrition will be prioritized. This study aimed to examine stakeholder perspectives on how nutrition policy in Zambia can be strengthened, with a particular focus on assessing the feasibility of developing and implementing nutrition policy options that address food environment drivers for the double burden of malnutrition among adolescents in Zambia. In so doing, we aim to identify the existing barriers and facilitators to policy change, which can inform advocacy efforts targeting.

Materials and methods

Study design

A qualitative prospective policy analysis research design involving in-depth interviews with nutrition policy stakeholders and policy document review was used. Prospective policy analysis 'seeks to understand the unfolding political-economy environment of policy change to support stakeholders to more effectively engage in policy processes' (Buse, 2008). Key to health policy analysis studies is the application of theoretical frameworks to understand the determinants of policy change (Walt *et al.*, 2008; Reeve *et al.*, 2021).

Theoretical frameworks

Given that agenda setting is a critical first step in policy reforms, we applied Kingdon's (1984) multiple streams theory as the overarching theoretical framework for this study. According to the multiple streams theory, policy change depends on factors in three parallel 'streams': the problem stream, which considers how stakeholders understand problems and their solutions; the policy solutions stream, which considers solutions proposed by actors; and the politics stream, which considers the contextual factors including interests and influence of different policy actors. The policy change has been shown to occur when the three streams converge, usually in response to an open window of opportunity. Focusing events that facilitate the coupling of the streams, such as changes in political office or the presence of policy champions or entrepreneurs, are essential to opening windows of opportunity.

The multiple streams theory has been widely used to 'retrospectively' understand why some policy issues get on the government's policy agenda while others do not (Béland and Howlett, 2016). However, we applied this theory 'prospectively' to assess the feasibility of nutrition policy reforms for the double burden of malnutrition by analysing the current status of the critical factors in the problem, policy solutions

and political stream that are required to get an issue on the agenda based on the nutrition stakeholder's perspectives and data from policy document analysis. We analysed the current status of the factors under each of the three streams and reflected on the presence (or lack thereof) of focusing events that might facilitate opening a window of opportunity.

Data collection

Stakeholder interviews

A two-section interview guide was used to collect data from nutrition stakeholders. The first section was structured to collect information on how stakeholders perceive nutrition problems and the solutions required, corresponding to the problem and policy solution streams. In the second section, we aimed to understand the feasibility of policy options by exploring, facilitating and inhibiting factors and the power and influence of policy actors, corresponding to the politics stream of the multiple streams theory. We further included questions to explore what would be required to develop and implement two policy options recommended for healthy food environments: regulating the marketing of unhealthy food and beverages to children and healthy food provisioning in schools. These two policy options were chosen based on our previous research on Zambia's adolescent nutrition policy environment (Mukanu *et al.*, 2020) and global recommendations (WHO, 2017). Key findings from these studies showed that poor dietary habits among school-going adolescents were attributed to the wide availability of unhealthy food in and around schools and indiscriminate marketing of these food types to vulnerable groups like children and adolescents. The interview guide was piloted with three stakeholders from the health and education sectors before data collection.

We used purposive sampling to identify and recruit relevant stakeholders to participate. Respondents were identified through networks developed by the authors from previous nutrition-related research in Zambia (Mukanu *et al.*, 2020). We used experience from previous studies to identify respondents, and snowballing was used to identify additional

respondents. Potential participants were invited to participate via phone calls or email. An official letter requesting permission to interview the relevant staff experienced in nutrition policymaking was written for government institutions. Interviews were conducted virtually and in person by the lead author. Data were collected between March and July 2022. Interviews took an average of 40 minutes and were recorded with consent from the participants.

An initial 30 respondents were identified and invited to participate in the study. Of these, 25 responded, and 13 were interviewed in the first round of data collection. Seven additional stakeholders were identified through snowballing during the first round of interviews; four agreed to be interviewed in the second round. After the two rounds of interviews, the range of respondents reflected critical perspectives regarding Zambia's food environment nutrition policy, indicating theoretical saturation. The 17 respondents interviewed were drawn from government and related agencies ($n=7$), civil society ($n=3$), multilateral organizations ($n=4$), academia ($n=1$) and industry ($n=1$), as shown in Table 1. Types of respondents interviewed were senior-level officials with current or previous involvement in policymaking.

Documentary data

We reviewed policies ($n=17$) related to nutrition policy and food environments in Zambia further to understand the framing of malnutrition in policy documents. The policy documents were identified by checking through the publication section on the websites of government ministries with nutrition-relevant mandates, including the Ministries of Health, Education, Agriculture, Youth, Sports and Child Development, Community Development and Social Services; Commerce Trade and Industry and National Development Plan. A data extraction matrix was developed to facilitate the collection of relevant content from the policy documents, including the publication date, situation analysis of nutrition, and nutrition-related policy strategies and interventions.

Table 1. Respondents interviewed in the study

Sector	Number invited to participate	Number who responded	Number interviewed	Interviewee code
Government ministries and agencies				
• Health	3	3	2	Govt-Hea-1 and Govt-Hea-2
• Education	2	1	1	Govt-Ed-1
• Agriculture	2	1	1	Govt-Agric-1
• Commerce, trade and industry	3	2	1	Govt-Com-1
• Community development	3	2	1	Govt-Cdev-1
• Local government	1	1	1	Govt-Lgov-1
Manufacture-related associations	1	1	1	Man-1
Commerce and trade-affiliated organizations	1	1	1	Com-1
Health-related association	1	1	0	
Civil society organizations	4	4	3	CSO-1, CSO-2 and CSO-3
Bilateral and multilateral organizations	3	2	2	Bil-1 and Bil-2
UN agencies	3	2	2	UN-1, UN-2
Academia/think tanks	3	1	1	Acad-1
Total	30	20	17	

Details of the documentary data collection and analysis are provided in another paper (Mukanu *et al.*, 2022).

Analysis

Data analysis focused on identifying factors that would influence the development, implementation and prioritization of nutrition policy reforms with a particular focus on adolescents by the Government of Zambia. We used thematic analysis to systematically organize and identify patterns of meaning (themes) across the dataset to generate new knowledge (Braun and Clarke, 2012).

The first step of the analysis involved broad deductive coding of data from stakeholder interviews and documents to three predetermined codes: problem, policy and politics derived from the multiple streams theory. The coding was followed by further subanalysis of the data under each stream to inductively derive subthemes and patterns. Under the problem stream, we applied a framing analysis to documentary and interview data to examine the 'frames' used by stakeholders to make meaning of nutrition problems. This is important in prospective policy research as the frames chosen by policy actors to problematize an issue often determine the attention it receives, the actions chosen to address it and who is seen as responsible for acting (Shiffman, 2009; McIntyre, 2020). Data coded to the policy solutions stream was further analysed to identify perceived policy solutions and facilitators and barriers to developing and implementing the policy options for fostering healthy food environments. Under the politics stream, data were analysed to identify policy actors' perceived power and influence over nutrition policy development and implementation. Table 2 illustrates the overarching themes and subthemes and example quotes under each stream of the multiple stream theory.

Results

We used a narrative approach to present the findings from the analysis of data from documentary analysis and stakeholder interviews. The findings are categorized according to the three domains of the multiple streams theory (Kingdon, 1984), the overarching framework applied in the study. Under the problem stream, nutrition problems in adolescents were not perceived as a priority. However, there was a general acknowledgement that this age group requires to be prioritized. Under the policy solutions stream, regulating the marketing of unhealthy food and beverages to children as a policy option was perceived as not for the Zambian context. In contrast, healthy food provisioning in schools was perceived as feasible. Under the political stream, manufacturing companies were perceived as having strong influence and interest in challenging legislative policy reforms.

Problem stream: evidence and perceptions of the policy problem

Nutrition is a recognized policy problem

The perception of nutrition as an important national policy issue is an opportunity for nutrition policy reforms. From documentary data, poor nutrition in the vulnerable age groups was linked to negative long-term consequences such as poor cognitive development due to childhood stunting and increased risk of obesity and its related chronic conditions

(National Food and Nutrition Commission, 2018), while the 'well-nourished and healthy population' were identified as critical to national economic development (Republic of Zambia, 2006). Furthermore, women, children and, to a certain extent, adolescents were perceived as key populations vulnerable to nutrition-related problems (Ministry of Finance and National Planning, 2022).

There is limited prioritization of adolescents in nutrition policy

Some stakeholders acknowledged the need to address adolescents in nutrition programming better as they are a critical age group (Gov-Hea-1, Gov-Ed-1, CSO-1, UN-1, UN-2 and Bil-2). Stakeholders noted that adolescents needed to be protected to ensure they develop good nutrition habits that would prevent the development of chronic conditions in adult life (Gov-Hea-2 and Gov-Ed-1). While some stakeholders highlighted that the government was using a life-course approach to address nutrition (Acad-1), policy documents showed that the focus of nutrition programming and policies was on women of reproductive age and children under 2 years and did not explicitly include adolescents despite being identified as vulnerable to nutrition problems in other government policy documents (National Food and Nutrition Commission, 2018). Stakeholders also noted a dearth of 'formal' evidence on the nutrition status of adolescents. This lack of evidence rendered adolescents invisible and not part of the high risk group to be prioritized for nutrition policy investments (UN-2). Data were only available on nutrition-related outcomes like the prevalence of anaemia and body mass index among adolescent girls targeted because of the high risk for pregnancy. Anecdotally, stakeholders noted that presently under-nutrition was more of a problem in rural adolescents, while obesity was rising, especially among urban adolescents. This rise in obesity was associated with increased consumption of processed foods high in sugar, fats and salt (Gov-Cdev-1, Govt-Lgov-1 and Acad-1).

There is a concern but a lack of clarity regarding adolescent nutrition

Identifying food environment factors as influencers of adolescents' dietary choices by stakeholders and in policy documents is an opportunity to introduce policy options that address food environment drivers. Stakeholders noted that the availability of junk food around schools, prevalent advertisements of junk food usually combined with false claims about the nutritional value of food and attractiveness and convenience of acquiring and consuming fast foods made unhealthy a popular choice among adolescents. There was a need to urgently address this in Zambia (CSO-1, CSO-2, UN-2, Acad-1, Gov-Lgov-1 and Bil-1). However, the entrenched beliefs on the drivers of adolescent nutrition problems might present barriers to policy reform. Nutrition problems in documentary data were framed as arising due to 'lifestyle choices' and 'risky behaviour' or 'personal preferences' (Ministry of Health, 2013; Ministry of Youth, Sport and Child Development, 2015). Some stakeholders also perceived that the lack of information on what healthy eating consists of or the consequences of unhealthy eating were the biggest drivers of poor nutrition choices (Gov-Cdev-1, Bil-2 and Gov-Hea-1). This framing of nutrition problems might limit the extent to which food environment policy solutions are considered.

Table 2. Summary of the thematic analysis illustrating themes, subthemes and examples of quotes

Code	Overarching themes	Subthemes	Example quotes
Problem stream	Nutrition problems in adolescents/definition of nutrition problems	Adolescents not part of vulnerable populations	<p>‘We haven’t done so much with adolescents, we have been more focused in the vulnerable groups the under-five and the pregnant women’ (Bil-1)</p> <p>‘We target mothers and children but we forget to address the nutrition needs of the adolescents, the adolescent period is actually one of the critical areas that we should focus on because that prepares the body for the upcoming future happenings’ (Bil-2)</p> <p>‘Unfortunately, the way that financing has been designed a lot of nutrition money goes into maternal and child health’ (CSO-3)</p>
		Dual burden of malnutrition	<p>‘Double burden of malnutrition is present, of late over nutrition has been on the rise especially in the affluent populations’ (Govt-Ed-1)</p> <p>‘Primarily undernutrition is the problem because of the poverty but when you look at Lusaka or Livingstone you find that its over nutrition is a problem and that’s where obesity comes in’ (Govt-Cdev-1)</p>
		No information on the burden of nutrition problems	<p>‘We haven’t like done specific studies focusing on adolescents, we’ve been doing studies in women of reproductive age that is starting from 15 to 49 and in the 15 to 19 segment, anaemia is a problem’ (Govt-Hea-3)</p> <p>The issue is to provide evidence on what is the biggest issue because there isn’t much on the adolescents, we have not done a lot research like we have done for children’ (Acad-1)</p>
	Drivers of nutrition problems	Lack of information on what constitutes healthy food	<p>‘Specifically, in the urban areas, lifestyle choices are leading or causing malnutrition’ (Govt-Cdev-1)</p> <p>‘I have never seen anyone standing at the mall giving out booklets to sensitize people on healthy diets, our fast foods outlets do not even have any warning to say sugar is not good for your health’ (Govt-Agric-1)</p> <p>‘If you place a tax a sugar tax on a number of sugar processed commodities but then the consumer doesn’t even know why they shouldn’t take those commodities, they will continue looking for that commodity’ (Man-1)</p>
			Availability of unhealthy food in the environment
		Affordability of food	<p>‘Maybe what adolescents are eating in school because it’s easier to get a snack like chips, soda drinks at an eating place because they are cheaper than the nutritious options’ (UN-2)</p> <p>‘A person would rather spend less on that food that looks very appetizing regardless of how much sugar or salt content because its affordable’ (Bil-1)</p>
		Advertisements for fast foods	<p>‘How food is advertised in Zambia is quite concerning, issues of food and nutrition are not taken seriously’ (CSO-3)</p> <p>‘Companies make adverts are very appealing to the young ones and they think that’s the way to go so they easily go for it’ (Govt-Agric-1)</p>
		Convenience of food preparation	<p>‘Sometimes you don’t have time to prepare certain foods e.g. cooking beans, you need time to be there waiting, how many people have the time to do that?’ (Govt-Hea-2)</p> <p>‘In a home where parents are not oriented on what they should pack for their children they will quickly think of something that’s easy and fast, most parents will even stop by the mall in the morning to get snacks for the children as they go to school’ (UN-1)</p> <p>‘It is easier for a shop to have crisps and biscuits because you don’t need to store them in the fridge don’t have to worry about spoilage so extra costs for business owners’ (Govt-Cdev-1)</p>

(continued)

Table 2. (Continued)

Code	Overarching themes	Subthemes	Example quotes	
Policy stream	Proposed solutions to nutrition problems	Cultural/social influence	<p>‘There is a lot to do also with perception if you live in Lusaka you don’t go home for lunch but people would want to quickly grab a bite with colleagues’ (Govt-Lgov-1)</p> <p>‘This is an age group which copies mostly from their peers, if their friends are snacking they look at it to be a normal’ (UN-2)</p>	
		Public education using food-based dietary guidelines	<p>‘If we provide people with good adequate information, they’re going to make informed based choice and they are going to make good choices so that’s what we need to do’ (Govt-Hea-1)</p> <p>‘SHN policies are present, but education of the masses is still required. We need to normalize healthy food on TV and radio’ (UN-2)</p> <p>‘It’s better to educate somebody on nutritious foods, balanced diets to break all those cycles of bad nutrition habits due to life style choice’ (Govt-Cdev-1)</p> <p>‘It should start with teaching good health in schools so that while people are young it’s been instilled in their minds and they would be more cautious as they grow’ (Man-1)</p>	
		Regulate the marketing of unhealthy foods to children	<p>‘We need regulations that can guide content of food related adverts, currently there is no mention of the nutrition value that is contained that particular drink or snack or food’ (Bil-2)</p> <p>‘If we have less people thinking that an energy drink is nutritious I think that will help, so marketing should be regulated’ (CSO-1)</p>	
		Healthy food provisioning in schools	<p>‘Existing institutions like ZABS can have more of a say on kind of labeling and advertisements of food’ (CSO-2)</p> <p>‘ZABS to look at how we are complying to the set standards for one to be able to sell better package, better hygiene foods for the streets’ (Bil-2)</p> <p>‘The evidence is there, school environments are unhealthy, and the PTA can demand better’ (UN-1)</p> <p>‘Marketing is under the jurisdiction of the Zambia Institute of Marketing and I know that there is a bill that is under revision that is trying to enhance the provision of how the institution can regulate marketing’ (Govt-com-1)</p>	
		Existing infrastructure	<p>‘To monitor the activities in the whole Lusaka hasn’t been easy that’s why we need to digitalizing the operations and use technology or to ensure that we monitor or protect public health in this city’ (Govt-Lgov-1)</p>	
		Facilitators of policy reform	<p>‘Introduction of more effective policy options is not yet feasible. Civil society haven’t done enough to get the public aware for them to demand for better nutrition there is not enough public momentum in the country’ (CSO-1)</p> <p>‘We acknowledge that government has invested a lot in maternal and child nutrition but for adolescents we need more players and advocacy groupings to be able to show that this very important demographic group also’ (Acad-1)</p> <p>‘We have a few civil society organizations that may try to speak out on issues but I think that there is more that needs to be done and mainly those are based in Lusaka’ (UN-1)</p>	
	Barriers to policy reform	Weak governance coordination mechanisms	<p>‘We need strong scientific evidence to say if we do this these are the expected results that way you can convince the policy makers. Science should inform the decision not emotions’ (Govt-Lgov-1)</p> <p>‘We need to establish what is the problem in our adolescents, it under nutrition or over nutrition? If we don’t know, this age group will not be prioritized’ (Govt-Hea-1)</p> <p>‘We need to get to a point where there is enough data so that people can’t refuse that there is a need to do something about nutrition problems in adolescents’ (CSO-1)</p>	
		Weak nutrition advocacy	<p>‘We need to establish what is the problem in our adolescents, it under nutrition or over nutrition? If we don’t know, this age group will not be prioritized’ (Govt-Hea-1)</p> <p>‘We need to get to a point where there is enough data so that people can’t refuse that there is a need to do something about nutrition problems in adolescents’ (CSO-1)</p>	
		Lack of evidence on the extent of the nutrition burden	<p>‘We need to establish what is the problem in our adolescents, it under nutrition or over nutrition? If we don’t know, this age group will not be prioritized’ (Govt-Hea-1)</p> <p>‘We need to get to a point where there is enough data so that people can’t refuse that there is a need to do something about nutrition problems in adolescents’ (CSO-1)</p>	

(continued)

Table 2. (Continued)

Code	Overarching themes	Subthemes	Example quotes
		Rights of individuals	<p>‘It’s a tough one, people should make choices and individual decisions so you don’t want policies infringing on people’s rights. so best that schools can do is pass on the information on good nutrition’ (Bil-1)</p> <p>‘If the government limits these adverts for foods what am saying is that there is going to be an uproar as everyone has freedom of expression’ (Com-1)</p>
Politics stream	Influencers of policy change	Industry	<p>‘It is not an easy space to navigate in Zambia, companies are not concerned about being shamed for their practices unlike global corporations are more cautious about appearing woke’ (CSO-2)</p> <p>‘Imagine a business that is trying to come up in Zambia and then you limit the ability to expand because of restrictions, it means you are also limiting the farmers who are bringing the potatoes, the farmers who are rearing the chickens, there will be ripple effect. So, you really need to take into consideration of all these things so you need to balance as well’ (Govt-Cdev-1)</p> <p>‘School children are the biggest market for snacks and sugary drinks, so anything to do with any issue that will bring down their profit they will oppose’ (Govt-Hea-1)</p>
		Free market economy	<p>‘We need to be careful, the additional policies for school environment should not stifle the business environment remember we are in a free market economy’ (Govt-com-1)</p> <p>‘This approach of regulations is difficult, we are a free market economy so it would be very difficult to draw the line at who can advertise and how they can advertise’ (Govt-Cdev-1)</p> <p>‘In a liberal market system, everybody can sell something that has not been proven to be toxic so people engage in strategies to optimize their profits, celebrities are hired to increase coverage and acceptability by the general population, you can’t stop that’ (Acad-1)</p>
		Framing of the problem using evidence	<p>‘We need to show that unhealthy dietary patterns in adolescents has big impact on the economy and health of the population, we should say that by intervening and providing a healthy food environment in schools, we are going to save not only the children’s health but also the nation from having unnecessary expenditures’ (Acad-1)</p>

Policy/solutions stream: proposed policy solutions and barriers

There was a clear preference for education-based policy approaches

Perceptions about the causes of nutrition problems influenced perceptions about the feasibility of policy reforms. All the stakeholders acknowledged that additional policy measures are required to match the spectrum of nutrition problems in different population groups. However, because of the perception that a lack of knowledge caused poor nutrition habits, stakeholders proposed that education and information-based policy measures were required to raise awareness of the negative impacts of unhealthy diets and foster behaviour change in the entire population. Stakeholders proposed that government should lead efforts to foster behaviour change through public campaigns and the expansion of the nutrition component in the school curriculum. The Eat Well campaign implemented by the government through the National Food and Nutrition Commission (NFNC) with support from the World Food Programme was cited as an example of the government’s efforts to educate the public (UN-1, Gov-Hea-1 and Acad-1). The campaign uses local celebrities to promote healthy diets on the radio and social media. The availability of national

food-based dietary guidelines would further guide the content of the educational interventions (Gov-Agric-1 and Acad-1).

First, we need to start with education, as I have said. We need to sensitize our communities to the health benefits of some of these foods. Without that knowledge, it becomes challenging. I can have a lot of money, but if I do not know what is healthy for me is probably there on the market, I might buy a very sugary drink when I am supposed to be getting a fruit. So, sensitization is very key. (Gov-Agric-1)

Legislative policy options that are effective for addressing food environment drivers of the double burden of malnutrition were generally perceived as challenging to develop and implement and not yet feasible for Zambia (CSO-2, Gov-Cdev and Acad-1). Few stakeholders noted that policy options like taxation on unhealthy foods are helpful in improving the quality of food environments. Stakeholders noted that the country lacks the technology, capacity and resources to implement such policies (Gov-Com-1, Com-1, Gov-Lgov-1 and Gov-Cdev-1). Such perceptions might be rooted in the policy legacy of implementation of a similar legislation policy, such as the statutory instrument restricting the promotion

of breastmilk supplements. Stakeholders noted that the government has struggled to enforce this law due to the lack of capacity. In addition, manufacturers have reportedly found loopholes in other supporting laws, such as the lack of advertising standards (Gov-Com and Gov-Hea-1). Stakeholders noted that legislative policy options also have the potential to infringe on persons' rights, which might make them unpopular to the public and policymakers. Concerning the rights of individuals, stakeholders felt individuals should retain the right to choose what food they want (Gov-Lgov-1). Protecting the rights of individuals as well as ensuring that vulnerable groups like women traders are not disempowered was seen as cardinal for securing public support for legislative policy measures.

Feasibility of regulating the marketing of unhealthy food and beverages to children

Despite acknowledging the influence of advertisements on adolescent food choices, the introduction of marketing regulations was perceived as not feasible for Zambia. The government currently has no regulation targeted at the marketing of unhealthy food and beverages to children. Perceived barriers to the introduction of this policy option include the difficulty of tailoring the policy to the different types of media such as radio and internet (Bil-1), lack of government capacity and resources for enforcement (Govt-Lgov-1 and Govt-Hea-2) and negative impact on small businesses (Govt-Cdev-1).

Stakeholders identified some existing structures that could be leveraged to implement legislative nutrition policy options. Competition and Consumer Protection Commission and the Zambia Bureau of Standards were seen as government institutions that could be key in enforcing marketing regulations. It was proposed that Competition and Consumer Protection Commission, with its mandate to address misrepresentation by business owners, could help enforce regulation on false claims in advertisements. At the same time, the Zambia Bureau of Standards could develop food standards required to verify claims about food quality.

Feasibility of healthy food provisioning in the school environment

Restricting the availability of unhealthy food within the school environment was perceived by stakeholders as relatively feasible in the Zambian context. The NFNC, Ministry of Education, with support from the United Nations Children Emergency Fund, has plans to introduce nutrition-friendly schools in some pilot districts across the country (Gov-Hea-1 and Gov-Ed-1). The school environment was seen as easy to access and implement policies instead of targeting the general population. The Parent Teacher Committees were perceived as key stakeholders in the success of this policy option as they would garner the support required for implementation from stakeholders, including food vendors, learners and their guardians (Gov-Ed-1, Acad-1 and Gov-Com-1). The availability of national food-based guidelines and the school health and nutrition policy were also critical for facilitating the development of standards to guide the types of food that should be permitted in schools (Gov-Agric-1 and Gov-Hea-2). The local government stakeholders added that using their city planning mandate, they could restrict the issuing of trading licences

to regulate the types of businesses that can operate within a particular radius around school premises, thus contributing to healthy environments. Additional policy options that would further support the affordability of healthy food, such as subsidies, were also called for (Acad-1).

Politics stream: influence and power of policy actors

NFNC has the power to influence policy reform, but it needs to be further strengthened

Stakeholders indicated that stronger coordination and policy networks among nutrition policy actors would be required for policy reforms. From documentary data, the NFNC is mandated to coordinate nutrition in Zambia ([Government of the Republic of Zambia, 2019](#)). All government stakeholders perceived this mandate as providing power influence to the NFNC to drive nutrition policy change. For instance, stakeholders from the health sector stated that the NFNC was powerful because they convene the committee of permanent nutrition secretaries, an essential decision-making body for nutrition in Zambia. Stakeholders added that the NFNC's influence is shown through its coordination of the Most Critical Days Program, which guides the scaling up of nutrition activities of different government sectors, including health, water, sanitation and hygiene, agriculture, education and community development. While government stakeholders were confident in the NFNC's coordination role, some non-governmental stakeholders perceived that the NFNC being under the Ministry of Health made nutrition seem like a problem of the health sector and weakened the commission's influence over non-health sectors (Bil-1 and UN-1). These stakeholders proposed that the NFNC sitting under a 'neutral' organ of the government like the Office of the Vice President would be a better alternative. They added that the lack of an enforcement wing in the NFNC weakens the commission's power to influence the implementation of policies.

Manufacturing companies likely to block policy reforms

All the stakeholders perceived manufacturing companies as having high interest and strong influence over nutrition policy-making in Zambia. The power of the manufacturing industry to influence the government's policy agenda was primarily linked to the financial support that big manufacturers render to government ministries under the guise of corporate social responsibility (UN-2) and the free market economic system, which was perceived to favour the business interests of companies (Acad-1, Gov-Lgov-1 and Com-1). Stakeholders from the industry further added that the affiliation of manufacturers with the Ministry of Commerce, Trade and Industry, was a valuable network for pushing back on policies that negatively impact manufacturers. Stakeholders from the health sector seemed resigned to the fact that manufacturers would always oppose and find a way around policies that interfere with profits, such as restricting the marketing or taxation of unhealthy food. However, other stakeholders saw this interest as an opportunity for the government to proactively engage with manufacturers and incentivize their adoption of policy reforms by reducing their business costs (Gov-Cdev-1, Gov-Lgov-1 and Gov-Agric-1). For instance, small business owners

operating in the school food environment could be incentivized to provide healthy food options like fresh fruits by giving access to loan facilities that will help procure refrigeration equipment required to prolong the shelf life of perishable fruits (Gov-Agric-1). Some stakeholders added that the uptake of existing initiatives like the good food logo, a voluntary front-of-pack label spearheaded by the NFNC and Scaling Up Nutrition Business Network would be increased if it was coupled with an incentive like tax exemption on importation of equipment or ingredients required for the reformulation of unhealthy food (Man-1 and Gov-Com-1).

Public support is required for policy reforms but currently lacking

Stakeholders perceived that generating strong public support is critical for nutrition policy reforms in Zambia. Stakeholders felt that the public and policymakers could not relate to adolescent nutrition problems as evidence showing the burden or impact of diet-related problems like obesity in this age group is lacking (CSO-3, Acad-1 and UN-1). Some stakeholders proposed educating the general population on the causes of poor nutrition to appreciate and support legislative policy measures (Gov-Hea-1, Gov-Cdev-1 and Bil-2). All stakeholders perceived civil society organizations as having great potential to influence public demand for nutrition policy reforms in Zambia because of the ability to mobilize public support through advocacy activities. Civil society organizations can help tailor the framing of nutrition problems to show both short-term and long-term impacts on health and the economy so that everyone, including the government, the private sector, and the general public, can begin to realize how big of an issue poor nutrition is (Acad-1 and CSO-2).

In our efforts as researchers and civil society, we want to show that eating very badly in adolescents has a big impact on the economy and a big impact on the health of the population. If that is the case, then you could say that by intervening and providing a healthy food environment in schools, we are going to save not only the children's health but also the nation from having unnecessary bills that are coming. (Acad-1)

Discussion

This study examined the feasibility of introducing nutrition policy options that address the double burden of malnutrition among adolescents to identify barriers and facilitators to such policy reforms. Of the two focus policies, healthy food provisioning in schools was perceived as feasible, while regulating unhealthy food marketing to children was seen as not feasible. Based on the multiple streams theory, we categorized the barriers and facilitators into those related to the problem stream (perception of the problem), policy stream (existing and proposed policy solutions) and politics stream (political and institutional contexts). The study indicated that leveraging the life-course approach in nutrition programming where women and children are currently prioritized could facilitate policy reforms as the adolescence period is also among the critical intervention points in a person's lifecycle. Another key facilitator of policy reform was the availability of institutional infrastructure that could be leveraged to deliver adolescent-focused policies. However, the lack of evidence

on the burden and long-term impacts of adolescent nutrition problems was identified as a potential barrier. Although nutrition is a priority for the Government of Zambia, the food industry's strong influence over the government's policy agenda setting, economic ideologies and lack of public awareness to demand better nutrition were perceived as key barriers to policy reforms.

The power and influence of policy actors are essential in brokering nutrition policy reforms (Knaggård, 2015; Cullerton *et al.*, 2017). This study identified industry, the NFNC and civil society working through the public as the three main policy actors (potentially) influential in nutrition policy reforms in Zambia. Food manufacturers were perceived to have the most power to block more effective nutrition policies that they framed as 'unfavourable' for their business interests. The literature has numerous examples of tactics used by the food industry to steer the policy process in their favour (Dorfman *et al.*, 2012; Ronit and Jensen, 2014; Mialon *et al.*, 2015; Nixon *et al.*, 2015; Freudenberg, 2018). A key tactic used by industry, especially in developing countries, is funding government programmes through public-private partnerships (Mialon *et al.*, 2015). In Zambia, the government relies on such partnerships to help finance programmes in the social sectors, including health (Ministry of Finance and National Planning, 2022). For instance, a food manufacturer-affiliated foundation provided 28 million kwacha (approximately USD1.4 million) to the Ministry of Health to support the fight against Covid-19 (Chanda, 2020). This food manufacturer financing the foundation is among the producers of sugar-sweetened beverages and ultra-processed corn snacks. Partnerships between a government- and private-sector entity that produces health-harming commodities are discouraged as they present an inherent conflict of interest on the side of the government, which might weaken their ability to exercise their regulatory functions (Parker *et al.*, 2019). Similarly, health-sector respondents in this study felt that the government receiving support from big players in the food manufacturing industry is a serious conflict of interest. Through such large donations and other corporate social responsibility activities, the food industry in Zambia has bought its seat at the nutrition policy table, making the introduction and implementation of effective policy options like regulating marketing very unlikely.

Information-based policy solutions were perceived as very feasible for the Zambian context. This could be because most respondents framed unhealthy dietary patterns as resulting from a lack of knowledge, especially in adolescents. The choice of frames used for nutrition problems can influence policy reforms as it determines the support the problem receives from stakeholders and solutions proposed to address it, determining whether these problems get prioritized on the policy agenda (Jenkin *et al.*, 2011). Globally, information-based nutrition policy interventions are popular owing to their relative ease of implementation and lack of contention from policy actors like the food industry (Gorski and Roberto, 2015). Frames in nutrition health promotion messaging often allude to individual responsibility for healthy eating (Orste *et al.*, 2021). The individual-centric framing can, however, be a barrier to policy reform as it perpetuates the idea that diet-related problems are driven by poor lifestyle choices and should be addressed by the health sector, negating the role of other determinants. Incorporating frames that include food environment drivers of nutrition problems

in information-based interventions might help build public awareness, increasing demand for healthy food and fostering behaviour change. Public awareness campaigns coupled with strong advocacy by civil society can transform the public into powerful actors who, in some settings, were instrumental in passing effective nutrition policies like sugar taxes (Lee, 2010; Busse *et al.*, 2020). The weak advocacy and lack of public pressure remain the barriers to more effective policies to address the nutrition problem in Zambia.

This study shows that perceptions about free market systems strongly determined what policy solutions were perceived as feasible for the Zambian context by respondents. Legislative policy options such as restricting the marketing of unhealthy foods to children and taxation of unhealthy commodities were perceived as not feasible and difficult to implement because respondents felt such policies might infringe upon the liberties of businesses in a free market system. This perspective inhibits policy reforms as it entrenches the alternative narrative that behavioural factors are the key drivers of nutrition problems and relegates the role of the government to that of educating the population. Neoliberal political ideologies have been shown to facilitate diet-related nutrition problems (Glasgow and Schrecker, 2016). The main pathways include providing a conducive environment for the unhealthy food industry expansion (Lee and Crosbie, 2019; Lencucha and Thow, 2019) and limiting the policy space for governments to undertake their regulatory functions (Tienhaara, 2010; Kelsey, 2017).

The lack of prioritization of adolescents in nutrition policies was linked with a lack of evidence on the burden and impact of nutrition problems in this age group. It indicates that respondents in this study might hold a simplistic view of policy reform as occurring in a rational system where the availability of evidence is enough to result in policy reform (Walt, 1994). However, this might not be the case, as previous research found that policy networks and advocacy coalitions strongly influence nutrition policy reforms in Zambia. For instance, despite the availability of evidence on the potential public impact of a sugar tax on the Zambian population (Hangoma *et al.*, 2020), strong opposition from industry- and economic-sector policy networks was a barrier during the agenda-setting process, and the evidence-informed recommended rate was not adopted (Mukanu *et al.*, 2020). Harris (2019) also found that advocacy coalitions and health-sector policy networks helped transfer the global prioritization of stunting into Zambia's policy agenda.

Guided by the multiple streams theory, this study identified factors within the problem, policy and political streams that can facilitate or impede nutrition policy reforms for addressing food environment drivers of the double burden of malnutrition in adolescents. Fostering nutrition policy reforms will require addressing the barriers in each stream so that once a window of opportunity opens, there will be a higher chance of the stream's coupling resulting in policy reform. It also calls for a realignment of the existing ideology among policymakers that generating evidence on nutrition problems will be enough to bring about changes, as strong political factors need to be accounted for. Policy entrepreneurs and advocacy coalitions will be vital in overcoming the barriers and leveraging the opportunities identified in this study. Policy entrepreneurs, 'the powerful political and social actors' (Béland and Katalpally, 2018), will be required to help reframe the dominant narrative of nutrition problems and promote policy solutions

that are suited for the economic and social context and that leverage the existing institutions in Zambia. In the past, political figures in Zambia have contributed to public health policy reforms such as banning smoking in public places. However, the influence and power of political champions are tied to their political office. The influence might not be sustained after the change of political regimes, as has been the case with an anti-smoking campaign, which is no longer enforced in Zambia. Therefore, advocacy coalitions—the collection of people from different institutions with similar beliefs and aspirations about a policy issue who work overtime to influence policymakers to achieve their aspirations (Sabatier, 1988)—will be required for sustained support for developing and implementing policy reforms. Evidence shows that the activities of the advocacy coalition for stunting within the nutrition policy subsystem in Zambia have, over time, contributed to the prioritization and implementation of interventions for reducing stunting (Harris, 2019). Policy entrepreneurs and advocacy coalitions can also use the policy packaging approach to change stakeholder perceptions about the feasibility of more effective policy options for the double burden of malnutrition. Policy packaging is an approach where a combination of policy measures is used to offset the potential conflict between political feasibility and problem-solving effectiveness, which often arises for contested issues like nutrition policies (Fesenfeld *et al.*, 2020). In the case of Zambia, legislative and regulatory policy options like taxation unhealthy food could be bundled with a social protection policy such as the provision of healthy school meals, which is driven by the revenue from the taxes. Earmarking revenues from 'sin' taxes for health promotion interventions improved public support during the policy development processes for sugar-sweetened beverage tax in South Africa (Bosire *et al.*, 2020) and the Pacific countries (Thow *et al.*, 2011).

A strength of the current study is the good representation of stakeholders from key sectors involved in nutrition policymaking in Zambia, meaning that the different perspectives important in considering Zambia's food environment policies were captured. The documentary and interview data triangulation also comprehensively understood the problem. One limitation of our findings is that the stakeholders interviewed provided perspectives based on their experiences, and it is unclear how representative these perspectives are of the sectors they represented.

Conclusion

Unlike legislative policy options, information-based policies were perceived as more feasible for the Zambian context. The preference for 'softer' nutrition policy interventions like public campaigns by governments lies in the ease of implementation as they require relatively less capacity. Legislative policies, however, require additional mechanisms for enforcing or monitoring compliance and are hotly contested by powerful policy actors like the food manufacturing industry. While legislative policies were deemed not feasible, identifying existing infrastructure that can be leveraged to enforce nutrition policy regulation is a bright spot as it implies recognition of intersectoral linkages in nutrition. The nutrition policy landscape requires policy entrepreneurs and advocacy coalitions that will broker policy reforms for addressing food environment drivers of the double burden of malnutrition by helping raise public support and re-engineer

the framing of nutrition problems and their solutions in Zambia.

Abbreviations

NFNC = National Food and Nutrition Commission.

Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.

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Author contributions

M.M.M. has contributed to the conception or design of the work, data collection and drafting the article; M.M.M. and A.M.T. have contributed to the data analysis and interpretation; A.M.T., Z.J.-R.M. and P.D. have contributed to the critical revision of the article; all authors gave final approval of the version to be submitted and all authors should approve the paper prior to submission.

Reflexivity statement

The authors of this work include three females and one male of varying levels of seniority and experience in nutrition policy research. The main author, Mulenga Mary Mukanu is a doctoral student from Zambia, while the co-authors are associate professors from South Africa, Belgium and Australia. All the authors have extensive experience in nutrition policy processes and prevention of diet-related non-communicable diseases in low- to middle-income countries in sub-Saharan Africa and the Pacific region. As the main author, identifies with the position of advocate when conducting this research as they want to contribute to changing the status quo of nutrition policy interventions in Zambia by drawing attention to food environment-based policy solutions.

Ethical approval. This study was approved by the Institutional Review Board ERES Converge (12 August 2020) in Zambia and by the University of the Western Cape's Humanities and Social Sciences Research Ethics Committee (HSSREC) in South Africa (Reference Number: HS20/6/19).

Conflict of interest statement. None declared.

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