



SOUTHERN AFRICAN INSTITUTE
for POLICY AND RESEARCH

Occasional Paper Series

Challenges, Opportunities, and Constraints in the Standardization and Enforcement of Nutrition Labelling and Claims in the Zambian Market

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October 2021

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Abstract

Urbanization in Zambia has led to a concerning rise of diet-related noncommunicable diseases (NCDs). Notably, urbanization has altered dietary patterns by increasing consumption of processed foods which are usually high in salt, fats, and sugar. The accessibility and affordability of pre-packaged foods in Zambian markets have all contributed further to a rising triple-burden of disease in Zambia. Several countries globally have adopted the use of nutrition labelling as an intervention to combat this rise in NCDs. We examined the challenges, constraints, and opportunities for effective nutrition labelling in Zambia. This was achieved through a systematic review of primary and secondary data sources. It was found that socio-demographic factors, marketing/advertising, public nutrition education, and the degree of nutrition knowledge possessed by each individual consumer all have a significant influence on their utilization of nutrition labels.

Recommendations for further reinforcement of this topic include the need to establish a policy framework for the standardization of nutrition labelling, as well as the implementation of labelling guidelines to enforce uniform testing for the certification of products. Another prominent recommendation addresses the urgent need to promote nutrition education across the Zambian food industry, health and nutritional professionals, and most importantly among consumers to comprehend the essentiality of utilizing food labels on products to inform purchases.

Acronyms

CUTS	Consumer Unity Trust Society
EWC	Eat Well Campaign
FOPL	Front-of-package Labelling
FOPNL	Front-of-package Nutrition Labelling
GFL	Good Food Logo
MoH	Ministry of Health
NCD	Non-Communicable Diseases
NFNC	National Food and Nutrition Commission
NL	Nutrition Labelling
SBN	Scaling Up Nutrition (SUN) Business Network
STEPS	WHO STEPWise Approach to NCD Risk Factor Surveillance
UNZA	University of Zambia
WFP	World Food Programme
WHO	World Health Organization
ZABS	Zambia Bureau of Standards

1. Introduction

The rise in urban populations in African cities has been described as rapid, unplanned, and unmanaged (UN Habitat, 2014). It has put an increased pressure on arable land for farming which has led to a significant reduction in the food producers-to-consumers ratio as evidenced by the disruptions in the availability, accessibility, affordability, and overall distribution of healthy foods (Bosu, 2015), (Crush et al., 2011), (Satterthwaite et al., 2010). Therefore, healthy foods such as fruits and vegetables, and plant-based proteins have become more scarce and relatively expensive causing populations to consume more affordable and available foods which are usually prepackaged and high-energy dense alternatives. For these reasons, rapid urbanization in African cities has been found to be a major contributor to the rise in diet-related NCDs (Juma et al., 2019).

In the last two decades, Zambia has experienced rapid economic growth which has brought rapid urbanization and therefore changes in the food systems (Ziba and Phiri, 2017). The nutrition transition in urban areas of Zambia has caused an increase in the number of large supermarkets and food vendors that offer foods containing excess amounts of sugar, salts, and saturated and trans fats—all of which are drivers of diet-related noncommunicable diseases (Harris et al., 2019), (Global Panel, 2016). The transition has also fostered a shift in the Zambian food system to include more processed and prepackaged foods; access to more tradable and less perishable foods through the emergence of fast-food restaurants and supermarkets; and significant changes in consumer preferences due to increased incomes and growing interconnectedness to the global middle class (Harris et al., 2019).

This growing trend in urbanization, coupled with aggressive marketing/advertising, has notably influenced consumers' preferences/food choices, especially among children and young adults (Laraia et al. 2017), (Harris et al., 2019). According to the Zambia STEPwise Approach to NCD Risk Factor Surveillance (STEPS) of 2017, 90.4% of Zambians are consuming less than 5 servings of fruits and vegetables per day (Ministry of Health - Zambia, 2017). The survey also found that 6.2% of the Zambians have raised fasting blood glucose, 7.4% have high blood cholesterol, and 4.2% of the Zambians in the 40 - 69 age group have a 10-year CVD risk of 30% or above. Thus, Zambia is currently witnessing a rise in diet-related non-communicable diseases including, but not limited to, type II diabetes, obesity, hypertension, cardiovascular diseases, and dyslipidemia. This urges a need to develop systematic frameworks to combat this emerging pandemic.

Several countries including the U.S, Australia, and the U.K. are protecting their populations from the rise of diet-related NCDs by providing nutrition information through labelling. This display of nutritional information on food products has become mandatory in most high-income countries (*Global Update on Nutrition Labelling*, 2018). By emphasizing the nutritional value of particular food products, nutrition labelling holds the ability to modify

food consumption patterns among households, by raising awareness (WFP, 2018). Enforcement of labelling regulations ensures that manufactures develop products that promote healthy eating and consumers make informed food purchasing choices.

Nutrition labels can be a cost-effective tool for communications of nutritional information to consumers, but labels can sometimes be complex and not always effective (Miller and Cassidy, 2015). For nutrition labelling to be effective, consumers need to have nutrition knowledge and understanding of the importance of nutrition labelling. Prior nutrition knowledge can help consumers pay attention to the important information on labels, facilitate the comprehension of, and memory for nutrition label information, and support the application of nutrition labelling in making informed purchasing decisions (Miller and Cassidy, 2015). According to the Zambia STEP survey of 2017, the provision of nutrition information to the general public is of extreme importance to promoting healthy lifestyles across Zambia (Ministry of Health - Zambia, 2017). Therefore, nutrition education is key to raising awareness and establishing the importance of consumer evaluation of nutrition labelling in Zambia.

1.2 Statement of the Problem

Labelling formats in Zambia are currently based on the Food Safety Act of 2019 and the CODEX Alimentarius (1985, amended 2013). Per these regulations, all food products are to bear information that enable consumers to make informed purchasing decisions. Despite these existing laws and regulations, there is still a need to adopt multi-faceted measures that will ensure the utilization and enforcement of the nutrition labelling regulations among both manufacturers and consumers. This is not only due to the lack of consistency in nutrition labelling regulations, but also due to the lack of nutrition knowledge and awareness among the population of Zambia. There is an urgency for nutrition education programs that are of equal importance to the establishment of nutrition labelling regulations. Also, with rapidly increasing access to technology, there is a rising need to adequately regulate media platforms and marketing forums in order to raise consumer nutrition awareness and educate consumers on the importance of diverse diets. Therefore, the need is to not only address nutrition labelling itself, but also to provide an understanding of the challenges, constraints, and opportunities that accompany it and largely define its stance within the Zambian context.

1.3 Objectives of the Research

The purpose of this research was to study the progress made on the promotion of healthy eating through current nutrition labelling paradigms in Zambia. Specifically, we analyzed the challenges, opportunities and constraints in the standardization and enforcement of nutrition labelling regulations in Zambia.

This was accomplished by analyzing the following the specific objectives:

- I. Examine the existing Nutrition Labelling guidelines and standards, both internationally and in Zambia.
- II. Examine existing literature regarding the prevalence of consumer use, knowledge, and understanding of nutrition labels, as well as the impact of Nutrition Labelling on consumer dietary habits.
- III. Determine the current obstacles for compliance to Nutrition Labelling guidelines and standards.
- IV. Examine the role of marketing campaigns, advertising, and media platforms on consumers' food choices in Zambian markets.

These objectives provided our research findings and interviews with a clear sense of direction. They are comprehensive as they account for the challenges, constraints, and opportunities that characterize past and ongoing efforts to establish Zambia's nutrition labelling standards and guidelines as a response to the rise in non-communicable diseases.

The structure of this paper will mimic our research process. We will first present the process and findings of our literature review. Then we will expand on the methods used to conduct semi-structured interviews with the stakeholders and present our findings. Finally, we will suggest recommendations for stakeholders involved in the implementation of nutrition labelling and conclude with a final discussion.

2. Methodology

To gather information on the current efforts being done to standardize and enforce the nutrition labelling in Zambia as a tool for nutrition education and promotion of healthy eating, relevant literature was reviewed and semi-structured interviews with stakeholders were conducted in collaboration with the Nutrition Association of Zambia and the Southern African Institute for Policy and Research (SAIPAR). Reports detailing the rise in the prevalence of NCDs in Zambia together with those that detail the current state of nutrition labelling in Zambia provided information for the literature review. This included the Zambian Demographic and Health Survey (DHS), the STEPS survey, the CUTS survey, current Zambian food safety and standards acts, together with journal articles and reports detailing the state of nutrition labelling use, understanding, and implementation globally, specifically in countries with similar demographic characteristics as Zambia.

Fourteen semi-structured interviews were conducted with expert stakeholders in Lusaka, Zambia in late June and July of 2021. Stakeholders were found through snowball sampling where initial interviewees put us in contact with other stakeholders. As a result, the sample of stakeholders covers a range of different professionals within the field, but is non-random. Stakeholders represented individuals from the World Food Programme (WFP), Scaling Up Nutrition (SUN) Business Network (SBN), University of Zambia (UNZA), National Food and Nutrition Commission (NFNC), Ministry of Health, Zambia Bureau of Standards (ZABS), together with nutritionists who work in the private sector and an individual in the small-to-medium enterprise.

A number of questions were selected for each interview from a longer list based on the type of stakeholder being interviewed and their engagement with their respective organization. These questions were left open-ended to allow for the direction of the conversation to be flexible. Hand-notes were taken during the interview. Consent was requested per the use of a consent form provided with the initial invitation to request participation in the study. To protect the anonymity of some interviewees, their names and organisations are not used in the paper. Information obtained was used to discuss the state of nutrition labelling in Zambia, and to make recommendations to better standardize and enforce nutrition labelling.

3. Literature Review

3.1 Overview

Across the globe, the rate of non-communicable diseases is on the rise. They have become global nutritional issues of concern, especially among uneducated populations and those of lower socio-economic status. According to WHO, NCDs cause more than 41 million deaths each year, equivalent to 71 percent of all deaths (*Noncommunicable Diseases*, 2021). Non-communicable diseases are disproportionately affecting people in low- and middle-income countries where more than 75% of all NCDs deaths occur, approximately 31 million NCD deaths annually (*Noncommunicable Diseases*, 2021). In Zambia, NCDs have accounted for 3,640 deaths due to cardiovascular diseases, 2,184 due to cancers, and 364 due to diabetes (WHO, 2018). One factor driving the growing NCD burden is the increased consumption of pre-packaged foods that are energy-dense, high in sugar, and high in trans fats due to an increase in the availability, accessibility, and affordability of such foods (*Prevention and Control of Non-Communicable Diseases in Zambia*, 2017).

In response to an increasing NCD rate, many governments are implementing multi-faceted policy interventions. For a long time, nutrition education has been recognized as a strategy for the prevention of overnutrition and poor diets that lead to NCDs (Chavasit et al., 2017). Organizations and governments have developed guidelines to educate the public on healthy eating. Thus, with increasing urbanization and spread of pre-packaged foods, nutrition labelling can be used as an education tool for populations. Nutrition labelling boasts a multi-faceted use as an information tool for customers to make informed and healthy food choices. Moreover, it is also used as a marketing tool for the global food industry and a health promotion tool for society (Hawkes, 2010).

The Food and Agriculture Organization (FAO) states that nutrition labelling includes any written, printed, or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal (*Handbook on Food Labelling to Protect Consumers*, 2016). The lead global agency governing nutrition labelling is the Codex Alimentarius Commission (CODEX). This commission serves as the global guiding principle and authority model for food manufacturers, food safety control agencies, and trade organizations. The CODEX states three elements in nutrition labelling (*Global Update on Nutrition Labelling*, 2018):

- Nutrition declaration: standardized listing of the nutrient content of a food;
- Supplementary nutrition information and;
- Nutrition and health claims: representation that states or implies that a food has a particular nutrition and/or property including, but not limited to, energy value, content of protein, fat, and carbohydrates.

Nutrition labelling can either appear at the back of the package (BOP) or the front of the package (FOP). BOP labels are the most prevalent format worldwide with most countries having some sort of mandatory or voluntary regulation and guidelines on the labels (*Global Update on Nutrition Labelling*, 2018). Over the past few decades, BOP labels have adhered to guidelines and their required revisions to provide accurate information on the nutrition contents for the promotion of healthy consumer diets. Due to their complexity, however, FOP labelling has been adopted on a global scale. These panels are limited to incorporating only those nutrients directly related to the rise in NCDs (Chavasit et al., 2017). FOP labels add to the BOP label information by providing symbols, logos, or statements that assess a product's overall nutritional value. The FOP labels may include Guideline Daily Amounts (GDA), Multiple Traffic Lights (MTL), or any other nationally recognized symbol that acts as a seal of approval for the product's nutritional value (Appendix 1).

For this research, we discuss nutrition labelling as nutrient declarations and/or the nutrient and health claims found on packaged foods.

3.2 Nutrition Labelling: Global Perspective

Due to an increased prevalence of diet related NCDs, governments, food manufacturing industries, and international health organizations are currently collaborating on formulating approaches that will be most effective in providing consumers with nutrition information that is more accessible and comprehensible. Global studies on this topic describe the current trend in which developed countries consume a higher proportion of packaged foods compared to developing ones (Hawkes, 2010). However, current findings also show that the rate of increase of consumption of these processed foods is actually higher in developing countries, such as that of Zambia (Hawkes, 2010). This raises a measure of concern of the need to mitigate the detrimental effects these consumption patterns can come to have as consumers start to lean towards the selection of processed foods for their diets.

Due to the difference in nutritional contexts and the disease burden that varies between countries, standards and guidelines vary from country to country. This distinction in standards/guidelines can be seen for instance in the United States, which has a nutrition labelling policy in place that mandates listing of nutrient contents of the food on the 'Nutrition Facts' panel and this must include total fat, calories from fat, energy as calories, sodium, cholesterol, dietary fiber, total carbohydrate, protein, sugars, vitamins, and minerals (United States Food and Drug Administration, 2017). Other countries like the EU member states, China, Canada, Mexico, Nigeria, Malaysia, Gulf Cooperation Council Members, Australia, and New Zealand, have mandatory nutrition labelling. While for other countries, including South Africa, Switzerland, Morocco, and others that follow CODEX standards, nutrition labelling remains voluntary (Table 1). These changes are in line with the CODEX 2013 amendment that stated, "Nutrition declaration should be mandatory for all

prepackaged foods for which nutrition or health claims, as defined by the *Guidelines for Use of Nutrition and Health Claims*, are made” (Guidelines on Nutrition Labelling, 2016).

3.3 Nutrition Labelling: Zambian Perspective

The Zambian government is currently grappling with a triple burden of diseases: malnutrition, micronutrient deficiency, and diet related NCDs. While more than 90% of the Zambian population consume foods from the informal markets (Consumer Unity Trust Society (CUTS), 2018), there is evidence that suggests that a nutrition transition is underway in Zambia, with people adopting a more westernized diet comprising of mainly processed and/or fried foods (Hawkes, 2010). Therefore, the standardization and enforcement of nutrition labelling to help consumers make better food choices in Zambia has been a crucial issue.

Currently, Zambia provides labelling guidelines through the Food Safety Act of 2019 where a label is defined as “a tag, brand, mark, pictorial, or other descriptive mater, written, printed, stenciled, marked, embossed, or impressed on, attached to, or included in, belong to or accompanying any food” (*Zambia Food and Drugs Act (CAP. 303)*, 2019). The act was placed after repealing the Food and Drugs Act of 1972 and sections 79 and 83 of the Public Health Act (*Zambia Food and Drugs Act (CAP. 303)*, 2019). It currently allows the Ministry of Health of Zambia to provide guidance in food labelling. The act also prohibits labelling food products in a manner that is false, misleading, or deceptive as regards to its character, nature, substance, quality, composition, merit, or safety. The current guidelines stated in the act do not define which nutrients should be listed in the labelling and do not mandate nutrition labelling even when a nutrition/health claim is made (*Zambia Food and Drugs Act (CAP. 303)*, 2019). Thus, the act itself has not done much to establish a greater presence of nutrition labelling practices in Zambia, but it has served as an attempt to enact a strategic plan to combat the presence of non-communicable diseases.

3.4 Impact of Nutrition Labelling: Local and International Perspectives

Despite the growth in demand for nutrition information, very little research has been done in developing countries to determine the extent to which consumers use and are impacted by nutrition information through labelling. Most of the studies on nutrition labelling are conducted in the Americas and Europe. To the best of our knowledge, there is no such study that has focused specifically on nutrition labelling in Zambia reported to date, and therefore, a majority of our information for this paper will stem from countries that have similar demographic characteristics to Zambia.

Many studies have suggested that the use of food labelling is associated with healthier eating habits. For example, a global systematic review done by Cechini and Warin, 2016, found that nutrition labelling is an effective approach for empowering consumers in choosing healthier

products by increasing the amount of people selecting a healthier food product by 17.95% (CI: 11.24 – 24.66%) (Cecchini & Warin, 2016). Conversely, the review does not find a significant effect of nutrition labelling on caloric choice or consumption hypothesizing that caloric content is only one of the multiple dimensions affecting the healthiness of products and removing unhealthy nutrients does necessarily mean a reduction in caloric intake. The majority of the studies within the systematic review were carried out in the Americas and European countries further showing the lack of suitable information on nutrition labelling from the global south.

A survey that was done to examine the relevance of label reading and consumer product choices in the Ho municipality of Ghana showed a strong link between the use of label information and their purchasing behavior (Azila-Gbettor et al., 2013). Among the 1,800 respondents that were surveyed, 66.05% agreed (or strongly agreed) that label reading influences the choice of brand, 78.05% agreed (or strongly agreed) that label reading influences their repurchasing decision, and 85.79% agreed (or strongly agreed) that label reading increases the desire/need to purchase a certain product.

Additionally, a qualitative study done in South Africa examined the reasons for reading nutrition labels and how they influenced consumers purchasing choices. The findings of the study suggested that nutrition label information may encourage participants to make purchasing decision but may also have a lesser influence where consumers are untroubled by the label information or are habitual purchasers (Kempen et al., 2011). It should be noted that the consumers chosen for the study were from the North-West University in Potchefstroom, South Africa, therefore, the participants had at least a secondary education and with a higher understanding of nutrition information.

4. Findings and Discussion

The findings from the semi-structured interviews and literature review were categorized into themes of challenges, constraints, and opportunities to allow for easier interpretation. These themes allowed for further categorization of our findings according to our research objectives.

4.1 Nutrition Labelling Guidelines in Zambia

Currently, the Zambian Food Safety Act of 2019 is used as a nutrition labelling guideline for products. These regulations were placed after repealing the Food and Drugs Act of 1972 and sections 79 and 83 of the Public Health Act (*Zambia Food and Drugs Act (CAP. 303)*, 2019). This act serves as a protection tool against health hazards associated with the manufacture and distribution of fraudulent food products. It emphasizes that any food product sold in

Zambia has a label to clearly indicate the name, the ingredients used in the product, the date of manufacture, and expiry date.

According to the stakeholders interviewed, the current guidelines stated in the Food Safety Act (2019) are too general and have loopholes that allow manufacturers, both local and foreign, to avoid the scope of the food law. For example, while the Act points out the penalties for fraudulent and false claims on nutrition labels, it fails to provide a concrete guideline on what should be included on nutrition food panels.

4.1.1 National Statutory Standards Body

The Zambia Bureau of Standards (ZABS) is a statutory body under the Ministry of Commerce, Trade, and Industry. It currently implements the Standards Act No.4 of 2017 which was placed after the repeal of CAP 416 of 1994. Under CAP 416, ZABS was responsible for the development of standards, enforcement of standards, testing certification, and metrology services (*History and Legislation of ZABS, 2018*). Under the new act, ZABS is mandated to:

- develop, publish, maintain, and withdraw Zambian national standards;
- provide inspection, testing, and certification of products;
- provide a voluntary certification mark scheme for the assurance of compliance;
- promote quality, healthy, and safety standards for commodities, products, and services;
- facilitate training in, and provide education on, standards and quality assurance;
- provide for a research and development program for new standards, improvement of existing standards, standardization of test methodology, and the articulation of future needs that might affect the standards environment and;
- participate and represent Zambia in international, regional and foreign bodies with functions similar to ZABS (*The Standards Act, 2017*).

According to the current mandate, ZABS does not function as a regulatory or enforcing body for standards. This has left the Zambian food market porous and the consumers vulnerable to various, unchecked packaged foods available on the market manufactured both locally and internationally.

According to interviews conducted, the main challenge for ZABS is human capital. In order to function effectively as a statutory body, ZABS needs enough auditors to develop, publish, and maintain Zambian national standards. Additionally, there was an identified need for more inspectors in ZABS to be able to discharge their duties more effectively and efficiently. While there is enough machinery for inspection and testing, there is also a need for more specialized individuals to research and develop new standards, and provide certification of food products.

At the time of this research, ZABS only had one office operating in the country's capital city, Lusaka. With the influx of both locally and internationally manufactured prepackaged food products on the market, there is a need for the expansion of the Bureau so as to ensure the compliance of current national standards.

4.1.2 The Good Food Logo

The Government of Zambia, through the National Food and Nutrition Commission (NFNC) in cooperation with the SUN Business Network (SBN), launched a joint initiative called the Good Food Logo (GFL) with the aim of helping consumers make better and more informed food choices. It was also implemented to encourage manufacturers to produce more nutritious foods. The Good Food Logo is a front-of-package label that acts as a certification mark for products that meet a predefined criterion for nutritional value (Appendix 3) ("*Good Food Logo*").

After the finalization of the criteria, the vice president of Zambia, Hon. Inonge Wina launched the GFL on October 15, 2020 ("*Good Food Logo Launch in Zambia*"). This was a two-pronged approach as it was simultaneously launched with the Eat Well Campaign (EWC).

The EWC was specifically aimed at raising consumer awareness on the importance of a diverse diet for the upkeep of bodily functions, good health, and disease prevention. It was also launched to increase nutritional awareness on a baseline level, therefore, making the efforts and the introduction of the GFL more achievable. These programs were a response to the current triple burden of diseases in Zambia.

The major advantage of the GFL lies in its simple, front-of-package, easy-to-read and understandable presentation. Unfortunately, stakeholder consultations revealed that very few members of the public are aware of the program or familiar with it. This necessitates a mass nutrition campaign to educate both consumers and manufacturers on the meaning and benefits of purchasing foods certified with the GFL or to obtain certification for it.

At the time of this research, approximately 10 months after the launch of the GFL, about 34 manufacturers had received certification. The certification process remains voluntary for manufacturers.

4.2 Consumer Use and Understanding of Nutrition Labels

Several stakeholder interviews revealed that there is a growing demand for information on healthy eating. However, this has not translated into consumers' understanding and use of nutrition labels. The extent to which consumers utilize nutrition label information has yet to be thoroughly studied within the Zambian context. Therefore, studies reviewed in this paper were conducted in countries with similar demographics to Zambia. Similarly, it was noted

that reading nutrition labels on food packages does not necessarily translate into their use nor the selection of products.

The degree of nutrition knowledge, or lack thereof, of any given consumer is equally important in order to make use of nutrition labels. Available empirical evidence indicates that a wide range of factors determine consumer use of nutrition labels and information including, socioeconomic status, locale (urban vs. rural), gender, age, education, and nutrition education/knowledge.

4.2.1 Socioeconomic Status (SES)

Themba and Tanjo (2013) evaluated the consumer usage of nutrition information in Botswana. They found that the importance attached to price largely influences the attention allocated towards the nutrition information of a packaged product and any given health claim (Themba & Tanjo, 2013). Therefore, those who perceive nutrient content as more important than the product price are more likely to take advantage of the provision of nutritional information provided by the label. It was also found that those who were of lower socioeconomic status (SES), unemployed, and of low educational attainment made poor use of nutrition information on food products.

Mulenga (2015) conducted a mall-intercept survey in Livingstone, Zambia. The study found that consumer understanding of the content displayed on Nutrition Food Panels (synonymous with nutrition labels) produced a statistically significant relationship to the variance in incomes among the Zambian population (Mulenga, 2015).

According to an interview with a nutritionist in the private sector, children under five years of age in lower-income households in Zambia are more likely to be affected by severe acute malnutrition. This is due to a number of factors including false nutritional claims coupled with aggressive advertising of sugary beverages and snack products by large manufacturing companies in the country. These giant food manufacturing industries take advantage of densely populated, marginalized areas and sell their nutritionally void products at a cheap price. For example, it was mentioned that there are products sold as milkshakes with the claim that they contain real milk by well-known food brands when in fact they only contain milk substitutes. It was also noted that parents of lower SES and with minimal nutrition knowledge are more likely to not give any attention to nutrition labels believing that these beverages are adequate substitutes for their children. These products pose a substantial threat to the nutrition of children under five in Zambia, especially breastfed babies as they are weaned off breast milk for these substitutes.

4.2.2 Urban v. Rural

The practice of reading food labels varies significantly in rural versus urban parts of a country. Chopera et al. conducted a study in Zimbabwe that found that 86.1% of urban shoppers read the labels on food products compared to 66.7% of their rural counterparts (Chopera et al., 2014). Urban respondents focused on the fat content on the food labels, while their rural counterparts looked specifically at the vitamins and minerals on the labels.

Kasapila and Shawa conducted a study in Malawi that found a low use (29.1%) and understanding (26.2%) of nutrition labels (Kasapila & Shaarani, 2011). They found that while rural and urban consumers had equal nutrition knowledge on dietary recommendations in Malawi, rural consumers were less likely to connect the NL knowledge to emerging diet-related NCDs compared to urban consumers. While these findings reflect the effectiveness of nutrition intervention programs, they imply that the nutritional information given has little focus on emerging NCDs and a more emphasis on under-nutrition (Kasapila & Shaarani, 2011).

According to NFNC representatives there is an additional concern in the rising prevalence of overnutrition in urban and periurban areas of Zambia including the Copperbelt, Lusaka, and Southern provinces. This has come to pose a secondary challenge to the promotion of consumer use of nutrition labelling.

4.2.3 Gender

Mulenga (2015) also evaluated gender in regards to the awareness and use of 'Nutrition Facts Panels' (NFP). These panels declared the ingredients and food contents contained in prepackaged foods. The study found that there is a higher rate of awareness of NFP among females than males, where 44.4% of males v. 55.6% of females claimed to have a 'good' understanding of nutritional information provided on products (Mulenga, 2015). Further, 41.5% of males compared to 58.5% of females claimed to possess a 'very good' understanding upon exposure to the information.

Themba and Tanjo found similar results in their study conducted among Botswana households in which female members with a completed degree of tertiary education displayed a greater use and attention to nutrition information provided on food products at their local markets (Mulenga, 2015). Despite this difference across genders, it all comes down to who it is that makes the dietary decisions in a given household. The decision maker sets the tone for the overall food consumption behaviors when selecting products at the market. Thus, depending on a woman's financial empowerment and decision making status in a household, she has the freedom to choose labelled food products to contribute to a diversified diet.

4.2.4 Age

Mulenga (2015) also found that those who made the most use of NFPs were found to be primarily middle aged individuals (31 - 45 years of age) and 41.8% of the respondents within this age range said they were aware of nutrition information on NFPs (Mulenga, 2015). Consumers in the younger age range (below 18 yrs), and those who were older (above 50 yrs), demonstrated lower awareness and utilization of the information on NFPs to inform their selection of food products.

4.2.5 Education

Despite controlling for external factors that impede consumers from recognizing nutrition labels on food products, such as the demographic factors outlined above, low-literacy levels account for a large obstacle consumers may have in the initial understanding of the labels. In other words, without adequate skills to read and internalize the information provided, nutrition labels can be rendered utterly futile.

Mulenga (2015) found that individuals with a higher degree of education hold a better chance of the proper utilization and application of the information obtained from reading a nutrition panel on a packaged food product (Mulenga, 2015). Furthermore, participants with lower education levels were more likely to have a minimal understanding of nutrition information provided on products. The number of Zambian respondents who participated in the survey and reported an 'excellent' level of understanding had at least received secondary education.

4.2.6 Nutrition Education/Knowledge

According to Cannosamy et al., there is a significant relationship between nutrition knowledge and nutrition label use. Respondents with 'excellent' nutrition knowledge had a higher frequency of nutritional label usage compared to those with 'fair' or 'very poor' knowledge (Cannoosamy et al., 2014). Nutrition knowledge facilitates nutrition label reading and utilization by increasing its perceived benefits and increasing the efficiency of label use.

Several stakeholders highlighted the influence of consumer's nutritional knowledge in making informed decisions. The success of any nutrition labelling campaign depends on the nutrition knowledge and awareness of the population. It is therefore crucial to establish consumers' nutritional knowledge to improve the utilization and impact of nutrition labels to make healthy dietary choices.

4.3 Obstacles to the Compliance of Nutrition Labelling Guidelines

4.3.1 Constraints at the Institutional level

Several constraints discussed in interviews can be considered to facilitate labelling implementation, standardization, and enforcement.

For there to be an effective enforced nutrition policy that ensures compliance with nutrition labelling requirements, there must be an administrative structure within the national authority with clearly defined responsibility on food control and regulation (*Handbook on Food Labelling to Protect Consumers, 2016*). According to interviews conducted, this is still a challenge for Zambia. While ZABS is recognized as a statutory body for the provision and maintenance of the national standards, the current Standards Act of 2017 does not recognize ZABS as a regulatory body.

Compliance and enforcement of food labelling is currently constrained by the lack of clearly communicated rules on mandatory requirements and any voluntary schemes or approaches that cover all foods irrespective of origin. Globally, some countries, including Zambia, have adopted voluntary nutrition labelling guidelines which contrasts those countries that have mandatory guidelines. According to the European Food Information Council (EUFIC), there is an ongoing debate over which nutrition labelling scheme is the most effective (*Global Update on Nutrition Labelling, 2018*). While empirical evidence has emerged on consumer preferences, their rationale, and how certain schemes impact purchasing behavior, there remains no consensus among stakeholders on the way forward. Therefore, global inconsistencies in labelling practices and guidelines must be solved to standardize and enforce labelling.

A stakeholder interview highlighted the inconsistency present in defining nutrition labelling in global societies. Some countries view it as a policy initiative to prevent and control the rise of NCDs, other countries view nutrition labelling as a tool for the prevention of consumer deceit when purchasing food products at supermarkets. This difference in perception of its purpose can have an unexpected effect on the way in which policies are implemented.

In an interview, it was noted that a lot of the SMEs run into a lot of bureaucracies within the country while trying to formalize the introduction of their food products into the markets, therefore delaying the process of obtaining GFL certification. The lengthy process becomes unprofitable to the manufacturers who often avoid the process entirely at the expense of consumer health.

4.3.2 Constraints at the Consumer level

It was noted in all of the interviews that a major constraint that nutrition labelling guidelines and standards currently face is the lack of consumer awareness, importance of NL, and its interpretation.

While nutrition labelling can impact purchasing choices for some consumers, it has been seen to not be effective for habitual consumers who have developed consumption patterns (Kempen et al., 2011).

Low-literacy levels are a mass-scale constraint that limit the initial understanding of nutrition labels on products, and thus leave minimal opportunity for consumers to actually put that knowledge into practice. The demographic factors mentioned in the previous section are also constraints of their own which influence consumer utilization and understanding of nutrition labels on a variety of scales.

4.3.3 Constraints at the Health Professional Level

As mentioned during stakeholder consultations, considerable attention must be directed towards increasing nutrition education for health professionals to acquire a solid nutrition foundation. The qualification level of nutritionists to accurately read and subsequently understand nutrition labels is limited in Zambia.

Efforts to increase education should be extended to not only consumers, but nutrition professionals themselves. The standardization of nutrition practices and training of nutritionists presently fail to include nutrition labelling. A stakeholder mentioned that there are low literacy levels among nutrition professionals in Zambia on current policies and guidelines to address malnutrition and rising prevalence of NCDs in the country. It was also pointed out that there is only a limited number of health professionals who have the capacity, knowledge, and appropriate skills to promote nutrition labelling, and NCD interventions for rural communities in Zambia.

There is also a limited number of clinical nutritionists in Zambia to provide consumers with valuable information on the selection of food products and healthy diets. Existing literature has highlighted the need for more clinical internship opportunities and an increased accessibility to professional development in the nutrition field, which can consequently provide consumers with accurate nutrition information to adopt healthier consumption behaviors (Rice & Lambert, 2019).

4.4 Influence of Media and Marketing on Consumer Food Choices

Multiple stakeholder interviews on the development of the GFL and the EWC revealed the importance of using media and marketing to raise awareness on nutrition among consumers.

Aggressive marketing from the private sectors usually promoting unhealthy, highly processed packaged foods has brought attention to the possible effective utilization of media outlets for the betterment of society. For instance, as mentioned in a stakeholder interview, the GFL and the EWC campaigns adopted the use of billboards to promote social and behavioural changes. Additionally, efforts to reach the public through the radio, television, local celebrities, Facebook, and other social media platforms have a positive influence on consumer purchasing behaviors.

A stakeholder reported the increased involvement of the Zambian youth on social media, especially that of Facebook (approximately 2 million users), implying increased access to positive nutritional information. However, the youth are not the main decision makers in the selecting and purchasing of food products for the household. Thus, at this initial phase, these platforms can be deemed ineffective and capable of having only a slight impact.

At present, there is a surplus of technological transformations that hint towards the future use of media platforms to publicize the use of nutritional labels on packaged foods.

5. Conclusions and Recommendations

5.1 Implications of the Research and Recommendations

5.1.1 Nutrition Labelling Guidelines

There is a need for stricter standards and enforcement of nutrition labelling to prevent false advertisement and the manufacturing of fraudulent products. Empirical evidence from countries with mandatory nutrition labelling such as EU member states and the U.S., has shown that nutrition labelling has brought about a decrease in deceitful marketing and an alteration of consumption patterns (Cecchini & Warin, 2016). Therefore, the Zambian government should consider developing standardized nutrition labelling guidelines that can be implemented into policies and laws that can ensure stricter enforcement.

While ZABS is currently recognized as a statutory body for the provision of standards and guidelines for food labelling, its current mandate does not make it a regulatory body. Therefore, an administrative body must be delegated within the national system that enforces and maintains the standards that ZABS currently sets.

It was also noted that while ZABS creates nutrition labelling criteria, there is a lack of current and specific nutrition labelling guidelines. The current Food Act of 2019 and the Standards Act of 2017 do not specify guidelines for nutrition labelling but rather criteria. This calls for a defined enforced nutrition labelling policy regime and guidelines.

With ZABS facing inadequate human resources, it was recommended that ZABS subcontracts private companies for testing and inspection services to provide certification, and therefore expedite the certification process.

5.1.2 Nutrition Education

i) Public Awareness:

There is a need to improve nutrition education through initiatives or campaigns that emphasize the importance of nutrition labelling as a promotion tool for healthy eating. Public sensitization should be an integral part of any intervention (Ministry of Health - Zambia, 2017). Stakeholders suggested that the government can utilize existing frameworks to promote education/awareness on nutrition labelling including the National Health Week, National Religious Leaders Indaba on Health Declarations, and more.

ii) Health and Nutrition Professionals:

Health professionals can serve as a first base for providing correct information regarding healthy lifestyle behaviors that may prevent the development of diet-related NCDs. Therefore, the following should be considered for health and nutrition professionals:

- It was noted that there is still a low understanding of nutrition labels among nutrition professionals. Therefore, these professionals should be educated on the importance and interpretation of nutrition labelling. This could be achieved by holding professional development workshops held by experts in the field.
- Health and nutrition professionals must acquire a fundamental level of awareness of the several socio-demographic factors affecting consumer behavior/nutrition knowledge. This will facilitate the implementation of diverse interventions directly oriented towards the specific needs of the community.
- Several interviewees pointed out the necessity of governmental and organizational promotion and facilitation of prompting the youth to enter the field of nutrition. There is a need for more specialized nutrition professionals to mitigate this lack of nutrition awareness amongst the Zambian population.

iii) Small to Medium Entrepreneurs (SMEs)

SMEs and other relevant stakeholders in the Zambian food industry should be educated on how to accurately perform nutrition analysis for the presentation of their products. It was brought up in an interview that currently, most have minimal to no knowledge on the preparation of their products to attain the tittlement of nutritional authentication.

- Upon receiving education on conducting nutrition analysis of products, SMEs could also be provided with access to certain laboratories who abide by the standards/regulations of supermarkets in Zambia, to facilitate and ensure complete certification of their products.

iv) School Curriculum

Nutrition education must become an integral part of the curriculum from the formative stages of education to instill healthy consumption behaviors at a young age. It should not be promoted merely as a means to address the aftermath of inadequate diets, such as the presence of diet-related NCDs, but rather as a preventative measure to aid in consumer adoption of nutritious dietary products.

5.1.3 General Nutrition Status

Southern African countries, such as Botswana and South Africa, are gradually adopting the sugar tax for sweetened beverages to control the consumption of products with elevated sugar content. Food product manufacturers producing products with false claims such as

synthetic high-sugar content juices, and ‘milkshakes’ containing only sugar and milk substitutes, must be regulated through the imposition of a sugar tax. These taxatory efforts may serve to prevent false advertisement and provision of health claims by the monopolized food industry inhabited by these giant food manufacturing companies.

5.2 Limitations

A prominent limitation we faced in carrying out this study revolved around literature/studies on NL awareness in Zambia. This prompted us to look at neighboring countries with similar demographics to that of Zambia, in order to compile our results.

We were also unable to conduct household surveys on consumer awareness as this was outside the scope of the Global Health Program. Thus, we were not able to gain much insight into consumer perceptions and individual behavior patterns on nutrition labelling. However, we conducted stakeholder interviews with individuals who possessed a degree of expertise on the research topic. The use of online sources, such as case studies, literature reviews, and journal articles complemented our stakeholder findings.

Acknowledgements

We would also like to thank Cornell University's Global Health Program in collaboration with the Southern African Institute for Policy and Research (SAIPAR). Specifically, we wish to thank Cornell University's Global Health director, Ms. Jeanne Moseley, and the rest of the teaching team - Ms. Mia Haller, Ms. Clara Rice, and Ms. Kieu Phan. We would also like to thank SAIPAR's Director of Research and Programmes, Dr. Marja Hinfelaar, and the Associate Director of the Legal Division, Dr. Tinenenji Banda.

Additionally, we would like to acknowledge private practice dietitian, Ms. Fathima Abdoola, with whom our collaboration with our Zambian contributors was made possible, and whose guidance was invaluable in the completion of this research endeavor.

Finally, we want to express our gratitude to the stakeholders who provided us with their time, consideration, and attention in the interview process and in their thoughtful, insightful responses.

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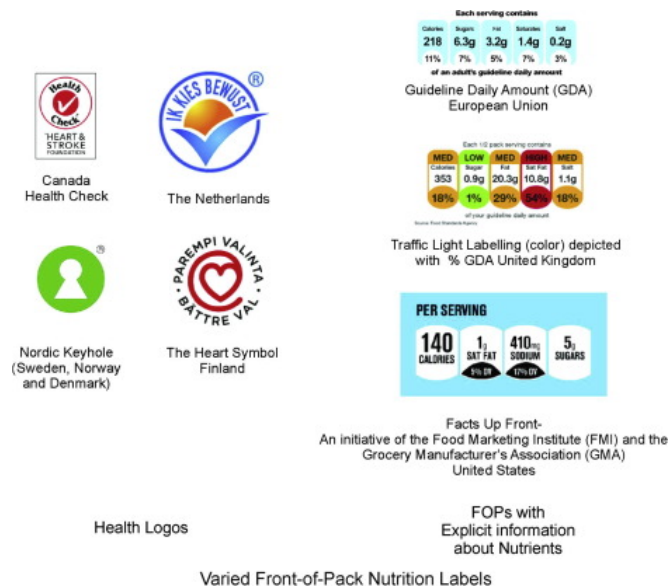
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Appendix

Appendix 1

Figure 1: Varied Front-of-Package Nutrition Labels



Sources: Becker et al., 2018

Figure 2: Back-of-Package Nutrition Labels

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

(United States Food and Drug Administration, 2017)

Appendix 2

Table 1: Nutrition Labelling across Regions and Countries

Region/Country	Description
United States, Canada, Mexico, Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Uruguay, European Union (EU) Member States, Russia, Israel, Gulf Cooperation Council members, Nigeria, India, Hong Kong, China, Japan, South Korea, Malaysia, Taiwan, Thailand, Philippines, Indonesia, Vietnam, Australia, and New Zealand)	Mandatory Labelling even in the absence of nutrition/health claims. They define which nutrients must be listed and allow voluntary initiatives to provide additional nutrition information.
Venezuela, Turkey, Switzerland, Morocco, Lebanon, Jordan, Singapore, Brunei, Myanmar, Vietnam, Kenya, Mauritius, and South Africa.	Voluntary Labelling where they define which nutrients should be listed but labelling is not mandatory unless a health/nutrition claim is made.

Source: Guidelines on Nutrition Labelling, 2016.

Appendix 3

Figure 3: Good Food Logo



Source: (Good Food Logo)

Figure 4: Eat Well Campaign



Appendix 4

Table 2: Stakeholders Interviewed

Organization
World Food Programme
Neri Clinic
Clinical Nutritionist
University of Zambia (UNZA)
National Food and Nutrition Commission (NFNC)
Zambia Bureau of Standards (ZABS)
Ministry of Health
World Food Programme
Joyous Mumm Food Processors
Scaling Up Nutrition (SUN) Business Network (SBN)

Appendix 5

Table 3 Challenges, Constrains, and Opportunities in the Standardization and Enforcement of Nutrition Labelling in the Zambian market (noted from interviews)

Challenges	Constraints	Opportunities
Lack of consumer awareness of nutrition labelling and the public health importance it carries with regard to the promotion of diversified diets and the selection of healthy foods at Zambian markets.	Established consumer behavior habits or consumption patterns pose difficulty in their modification on a mass-scale.	The results of this study in the country can provide valuable information for healthcare professionals, the government, food industry, perhaps even marketing industry, academia, and most importantly, consumers themselves.
Inconsistency among uniform nutrition labelling templates, health claims, and criteria of evaluation of food labels.	Lack of food processing laboratories or machinery within the Zambian food processing industry to verify the nutrient content/ingredients manufacturers claim their product to possess	Implementation of nutrition labelling in the country may prevent false advertising, assist in promoting food safety, and encourage balanced food diets among Zambian households.
Lack of manufacturer compliance to enforced guidelines due to inadequate revenues/resources.	Intricacies of performing business in Zambia. Overwhelming presence of bureaucratic loopholes one must go through to formalize their business, such as that of the Good Food Logo campaign	Enact efforts to elevate nutrition knowledge to facilitate the use of nutrition labelling (positive effect of knowledge on consumer's ability to perform nutrition label use)

<p>Governmental disregard for enforcing policies or regulations in some countries, versus developed mandatory schemes in others with regard to nutrition labelling efforts.</p>		<p>Mandatory labelling poses potential benefits such as product reformulation, product innovation, decrease of deceit and faulty health claims, and most importantly the alteration of consumption patterns.</p>
<p>Inconsistent view of labelling as a policy initiative to prevent, control and eliminate the rising presence of NCDs in some countries, versus its more restricted view as a simple tool for the prevention of consumer deceit when purchasing food products.</p>		<p>High rates of reading with minimal/limited understanding of nutrition information on nutrition labels offers possibility of efforts that can be made to either simplify labels or work towards improving/accelerating consumer education.</p>
<p>Singular, governmentally owned, organization in Zambia that provides certification of food products. There are a variety of widely distinct products, which test differently and thus result in an increasingly wide market. If this process could be simplified, there would not be a need to import nutritional foods from elsewhere, or for manufacturers to circumvent NL practices as a whole.</p>		<p>Low levels of reading/literacy levels in rural areas call for public health efforts to address education of rural consumers about nutrition labels and nutrition as a whole.</p>
<p>Attempts from SMEs to sell their products to leading chain stores and supermarkets face a grand obstacle in terms of adequate machinery. Although these markets may approve of the product, if SMEs are unable to produce it in tons due to limited machinery, their product is denied.</p>		<p>The socio demographic distinctions with regard to the use of nutrition labels to guide consumer selection of products help public healthcare professionals in proposing and implementing interventions to specifically target those groups in need.</p>
		<p>Since local markets are an important source of foods for households in Lusaka, the government can work in</p>

		<p>unison with councils to reconfigure such market spaces to promote the production of products with nutrition labels, or those with the GFL, to be sold in these areas that are not necessarily supermarkets</p>
		<p>Consumer priorities for dietary intake are currently undergoing a transition phase with broader focus shifting to calories and serving sizes, thus expanding the reach and urgency of comprehensive nutrition labelling efforts.</p>