Food and nutrition labelling: the past, present and the way forward

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Abstract

Current global mortality from noncommunicable diseases (NCDs) remains unacceptably high and is increasing. A major reduction in the burden of NCDs should come from population-wide interventions, including the promotion of a healthy diet through the provision of adequate nutrition information on food labels. However, in order for this type of intervention to be successful, it is important to have a better understanding of the consumer. This review focuses on the need for food and nutrition labelling (the section of information on a food label that specifically declares nutrient content) within the context of NCDs, as well as consumer nutrition label use, and understanding and the impact of nutrition labelling on purchasing behaviour. It provides a summary of the latest global nutrition labelling trends, the current situation in South Africa and the way forward. Consumer knowledge, use and understanding of nutrition labelling has been investigated extensively in the international literature. However, the majority of these investigations were conducted in developed countries. Therefore, additional research on the impact of nutrition labelling in developing countries is necessary, and should be a priority. There have been many developments in South Africa in terms of food and nutrition labelling in the last decade. Although the food industry, health professionals and consumers face many changes, challenges and opportunities with regard to food, and specifically to nutrition labelling, this is also the ideal time to promote the use and understanding of nutrition information on labels by health professionals to consumers.

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Introduction

The primary role of food labels is to inform consumers and aid in selling the product. However, the information conveyed by food labels has evolved over time. In the past few years, the objectives of food labelling have become numerous and complex under the influence of food legislation, food companies, retailers, public authorities and the consumer.[1]

According to the World Health Organization (WHO), food 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".[2] The South African regulations relating to labelling and advertising of foodstuffs (R146) also define a label as "any tag, brand, mark, pictorial, graphic or other descriptive matter, which is written, printed, stencilled, marked, embossed, impressed upon, or permanently attached to a container of a foodstuff, and includes labelling for the purpose of promoting its sale or disposal".[3]

In general, food labels inform consumers about the composition and nature of products to avoid confusion and protect the consumer against misuse, risk and abuse. Marketing information, including the selling price, brand name and commercial offers, is provided as well as information on the safe storage, preparation and handling of the food product.[1,4] Information on ingredients, nutrition and the declaration of potential allergens and nutrition and/or health claims, helps consumers to make an informed decision. There has been an emphasis in recent years on food safety and the protection of the health of the consumer as one of the main objectives of food legislation.[1]

Nutrition labelling is the section of information on a food label that specifically declares nutrient content.[5] According to the *Codex Alimentarius,* nutrition labelling is effective when it provides the consumer with information about a food to help him or her to make healthy food choices.[6] According to Bovell-Benjamin and Bromfield, it should also create a food selection environment which is more conducive to healthy choices.[5]

Nutrition labelling is considered a population-based approach,[5] and if well designed, can potentially have a positive influence on the diet of consumers,[7] and therefore contribute to the achievement of public health objectives.[2] Although consumers gather information about food from a variety of sources, including their families, education and the media, the food and nutrition label can provide the consumer with invaluable information at the point of purchase. Therefore, nutrition labelling also provides healthcare professionals with an opportunity

to educate clients on nutrition, and how to utilise this information to make healthier food choices.

The need for food and nutrition labelling within the context of noncommunicable diseases

According to the WHO global status report on noncommunicable diseases (NCDs), NCDs are the leading causes of death globally, killing more people each year than all other causes combined.[8] Even though infectious diseases and undernutrition dominate the current disease burden in the poorest countries, the major risk factors for chronic diseases are spreading.[9] Nearly 80% of NCD deaths occur in low- and middle-income countries.[8] NCD deaths are projected to increase by 15% globally between 2010 and 2020. The greatest increases will be in south-east Asia, the eastern Mediterranean and Africa, where NCDs will increase by over 20%.[10] NCDs are projected to surpass communicable, perinatal and nutritional diseases as the most common cause of death by 2030 in African nations.[8]

In terms of attributable deaths, raised blood pressure (13% of global deaths) is the leading NCD risk factor globally, followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%) and overweight and obesity (5%).[10] In South Africa, in 2010, the three risk factors which accounted for the most disease were alcohol use, high body mass index and raised blood pressure.[11]

Worldwide, the prevalence of overweight and obesity is increasing at an alarming rate. Globally, at least 2.8 million people die each year as a result of being overweight or obese.[12] In addition, 44% of the diabetes mellitus burden, 23% of the ischaemic heart disease burden and between 7% and 41% of the cancer burden is attributable to overweight and obesity. Overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings.[13]

The economic consequences of NCDs are also increasing. If NCD rates continue to increase as populations age and grow, and intervention efforts remain static, cumulative economic losses to low- and middle-income countries are estimated to surpass US$7 trillion over the period 2011-2025.[14]

South Africa is bearing a quadruple burden of disease as a result of infectious diseases linked to poverty and undernutrition, the effect of the human immunodeficiency virus/acquired immune deficiency syndrome epidemic, the increasing number of injury-related deaths, chronic diseases associated with overnutrition and the adoption of a Western diet.[15] South Africa's population consist of a wide variety of different cultural and ethnic groups, as well as a variety of education and income levels. The income difference is also revealed in the dietary intake of the population as the nutritional status of South Africans ranges from stunting to overweight and obesity. As people from rural areas move into urban areas (the nutrition transition), there is a considerable change in lifestyle, including decreased physical activity, increased consumption of fast foods, and an increase in the use of alcohol and tobacco products.[16]

It was found following a recent review of dietary surveys in the adult South Africa population from 2000-2015 that urban Africans in KwaZulu-Natal and North West province have a higher percentage energy intake from fat and added sugar than their rural counterparts, while South Africans in general have a very low fruit and vegetable intake.[17] Results from the Prospective Urban and Rural Epidemiological (PURE) study in North West province also indicated that urban South Africans have a higher intake of micronutrients than those living in rural areas, with a substantial percentage of people not meeting the dietary reference intakes (DRIs).[18,19] It was also found in this study that added sugar intake, particularly in rural areas, has increased rapidly over the past five years.[20] Large quantities of staple foods (maize and bread) are consumed by South Africans on a daily basis. Staple foods cost less per unit of energy than fruit, vegetables and animal byproducts,[21,22] and they are the preferred food choices of many people in poorer communities. Foods that supply energy at low cost are the most practical way for low-income individuals to meet their energy requirements as these foods are often those that also have a high energy density and satiety value.[22] With the overconsumption of staple foods, dietary fat, added sugar and a low micronutrient intake, South Africans are at great risk of NCDs.[17,20]

In 2008, 59% of men and 72% of women were overweight in South Africa, while 21% of males and 41% of females were obese. Thirty-five per cent of South African male adults and 32% of females aged ≥ 25 years suffered from high blood pressure.[23]

According to the South African National Health and Nutrition Examination Survey (SANHANES-I), published in 2014 (second edition), 23% of participants in the survey, aged ≥ 15 years had high serum total and low-density lipoprotein cholesterol (29%), while 48% had an abnormally low high-density lipoprotein cholesterol. Diabetes was diagnosed in 10% of the participants.[24] Overall, South African females had a mean body mass index (BMI) of 29 kg/m^2, which was significantly higher than that of the males (24 kg/m^2). The prevalence of overweight and obesity was significantly lower in males (20% and 11%) than in females (25% and 39%). It was also found in the survey that one in five males (20%), and more than two thirds (68%) of females, had a waist circumference that placed them at risk of metabolic complications. Similar results were reported with regard to a raised waist hip ratio (7% for males and 47% for females). When compared to the 2003 South African Demographic and Health Survey (SADHS), the SANHANES-I survey showed that obesity increased substantially in females, from 27% in 2003 to 39% in 2012.[24]

The WHO global status report on NCDs states that the epidemic of NCDs can be reversed through modest investment. Some effective approaches can be so low in cost that country income levels may not be a major barrier to successful prevention. However, good planning, high levels of commitment from government, community mobilisation and a strong focus on a small range of critical actions is crucial.[8] The WHO has identified a set of evidence-based "best buy" interventions which are cost-effective, and also feasible and appropriate to implement within the constraints of local low- and middle-income countries' health systems.[14] Individual-based "best buy" interventions are delivered in primary healthcare settings, and include counselling and drug therapy for persons with or at high risk of cardiovascular disease, and hepatitis B immunisation to prevent liver cancer. Population-based "best buy" interventions address tobacco and harmful alcohol use, as well as an unhealthy diet and physical inactivity. Examples in this regard include tax increases for

tobacco products and alcohol, smoke-free indoor workplaces, health information and warnings thereon, bans on advertising, restricted access to retail alcohol, reduced salt content in food, the replacement of trans fat with polyunsaturated fat, and public awareness through mass media on diet and physical activity.[25] With regard to raising awareness and promoting healthy diets, the WHO also recommends actions to provide adequate nutrition information through food labelling to help consumers make the right food choices.[8]

In South Africa, the *Strategic plan for the prevention and control of non-communicable diseases, 2013-2017,* was compiled to reach the targets set at the South African summit on the prevention and control of NCDs in September 2011. The summit accepted key principles for reducing NCDs through a declaration which was adopted by everyone present. Ten targets were set, to be reached by 2020. According to the strategic plan, the realisation of the overall health sector goal of "a long and healthy life for all" through the prevention and control of NCDs can be achieved with the implementation of three major components:

- The prevention of NCDs and the promotion of health and wellness at population, community and individual level.
- Improved control of NCDs through health system strengthening and reform.
- Monitoring NCDs and their key risk factors, and carrying out innovative research.[26]

Food labelling is considered to be a valuable and relatively low-cost tool to assist in reaching the goal of preventing NCDs and promoting health and wellness for all people (component 1).

Food and nutrition labelling

Nutrition label use and understanding: the consumer

There is a large and growing evidence base on nutrition labels, including numerous literature reviews which have been conducted on the topic of nutrition label use since 1991.[27] Generally, the findings have been consistent, with the self-reported use of nutrition labels being prevalent. However, consumers have indicated that they struggle to interpret quantitative information contained in labels, while some found different nutrition label formats, as well as too much information provided on the label, confusing. It was also found that consumers generally preferred graphical information, such as a logo, to the traditional nutrition information table.[28-33]

In a recent systematic review by Campos et al,[27] which included 120 articles, it was found that nutrition labels were perceived as a very credible source of nutrition information, and that many consumers use nutrition labels as a guide in the selection of food products. However, the use of nutrition labels varies considerably across different subgroups. Middle-aged or younger adults are more likely to use nutrition labels, while women reported using nutritional labels significantly more often than men. Individuals from lower-income groups are less likely to use nutrition labels, while it was also found that the Caucasian participants are more likely to use nutrition labels than any other ethnic group. Evidence shows a consistent link between the use of nutrition labels and healthier diets. It was also found in this systematic review that consumers tended to struggle with nutrition label understanding, and expressed a desire for the information to be presented more simply. There is contradictory evidence with respect to the ease or difficulty of using nutrition labels. Those using nutrition labels more frequently, younger consumers, and those with higher education, income, literacy and numeracy, reported a better understanding of nutrition labels. It is important to note that the research studies included in this review were mostly from high-income Western countries, and the authors recommended that additional research on the impact of nutrition labels in low- and middle income countries should be "considered a priority".[27]

Nutrition label use and understanding: the South African consumer

In South Africa, studies investigating the use and/or understanding of food labels in Gauteng and the North West provinces, as well as one national study conducted by Bosman et al, found that consumers were mostly positive about food labels as an information source.[4,34,35] However, it was found in a recent survey conducted by Van der Colff et al in Gauteng that the 279 consumers included in this study were generally dissatisfied with label attributes, including the believability, readability, comprehensibility and adequacy of food labels, as well as the primary information provided on the label. This included the expiry date, allergens, nutrition and health information, the ingredient list and quality guarantees.[36]

Bosman et al[35] conducted an investigation into nutrition labelling in South Africa, and this was the largest study to date since the publication of regulations relating to the labelling and advertising of foodstuffs (R146/2010). The study was conducted in nine metropolitan areas of South Africa on 1997 consumers by means of an interviewer-administered survey consisting of demographic information and 21 Likert scales on consumer use and opinions of nutrition information on food labels. The study was part of a larger project and was representative of both genders and the four main ethnic groups within the South African population.[35]

South African consumers read nutrition information on food labels to some extent, and were able to locate it.[34] However, some indicated that they were unsure of their understanding of the information provided.[37,38] Other difficulties experienced by consumers when using nutrition labels included the font size of the nutrition information, as well as the terminology used in the ingredients' list.[38] Therefore, it seems that with the proper education of consumers by health professionals and educational programmes on the importance of nutrition labelling, as well as the reading and understanding of food labels, consumers may be more willing and capable of making healthier food choices. Consumers who indicated that they did not read labels identified a lack of interest, time, price concerns[35] and habitual purchasing[37] as the main reasons. Some consumers have also indicated that they regard the taste of a product as being more important than its nutritional content.[38] This emphasises the need to educate consumers on how to make healthier food choices, while utilising the information provided on the food label, but within the boundaries of the aforementioned factors, e.g. educating consumers on how to compare the nutrition information provided on food labels, but for products within a specific price range.

The impact of nutrition labels on diet and health behaviour

An association between the use of nutrition labels and a healthy diet has been found in several studies. Those who use labels were found to be more likely to eat healthier foods, to have a reduced fat,[39-42] sodium,[43] cholesterol[44] and energy intake, and an increased fibre, iron[45] and vitamin C intake.[39]

It was found in a longitudinal study conducted in the USA on the effect of the 1990 Nutrition Labelling and Education Act, which came into effect in 1994, that frequent nutrition label users in 1995 had a significantly greater probability of consuming a low-fat diet than both non-label users in 1995 and frequent label users in 1989.[46] A second study on the implementation of this Act found that the BMI of nutrition label users fell significantly following implementation of the Act.[47]

The association between label use and health practices has also been studied. The literature shows that individuals with healthier eating habits use nutrition labels more often than those that do not.[48-51] Regular exercise, supplement use and not smoking (i.e. health behaviour that does not directly relate to nutrition) have been associated with the use of nutrition labels.[48,52-54]

The significance of food labelling during consumer decision-making

In general, food purchases are regarded as routine purchase decisions which require little involvement and an external search for information. But, contrary to other types of purchases, consumers often have to choose several items within a very short period during food purchasing. Some are more involved in the task of food purchasing (for whatever reason), and become more involved in the selection of products. These consumers usually pay more attention to label information. Consumers also tend to study the labels of food products with more complex nutritional composition more carefully than products with which they are more familiar, or which they find easy to interpret. Therefore, food purchasing can become demanding.[55]

Consumers behave and make decisions in different ways for different reasons.[56] A complex combination of external and internal factors influences consumers' food product-related needs. These include various demographic characteristics of the consumer, such as age, gender, education level, race, ethnicity, income, work status, and product knowledge, needs, personality, hunger and marketing-related influences.[27,55]

Food labels are particularly important when addressing consumers' needs, while food packaging, which often integrates labelling information as part of the container,[55] can influence consumer purchasing behaviour as these elements, including package colour, image, typeface and type of packaging, can generate an emotional response in consumers.[57] Bright colours, puzzles, games and cartoon characters used on packaging material may appeal specifically to children, and can influence product choice, intake, as well as the child's rating of the taste of a specific food product.[58-60]

Jacobs et al developed a conceptual framework of consumers' understanding and the use of information on food labels by combining information from various sources (Figure 1). A good overview of the decision-making process, as well as the internal and external influences which directly affect consumers' understanding and use of food label information, and their ability to make informed food choices, are provided by this framework.[38]

Different approaches to nutrition labelling

Four main approaches to front-of-pack nutrition labelling were identified following a review of front-of-pack labelling schemes conducted for the European Heart Network by Stockley et al. This information related to labelling schemes from France, Germany, Italy,

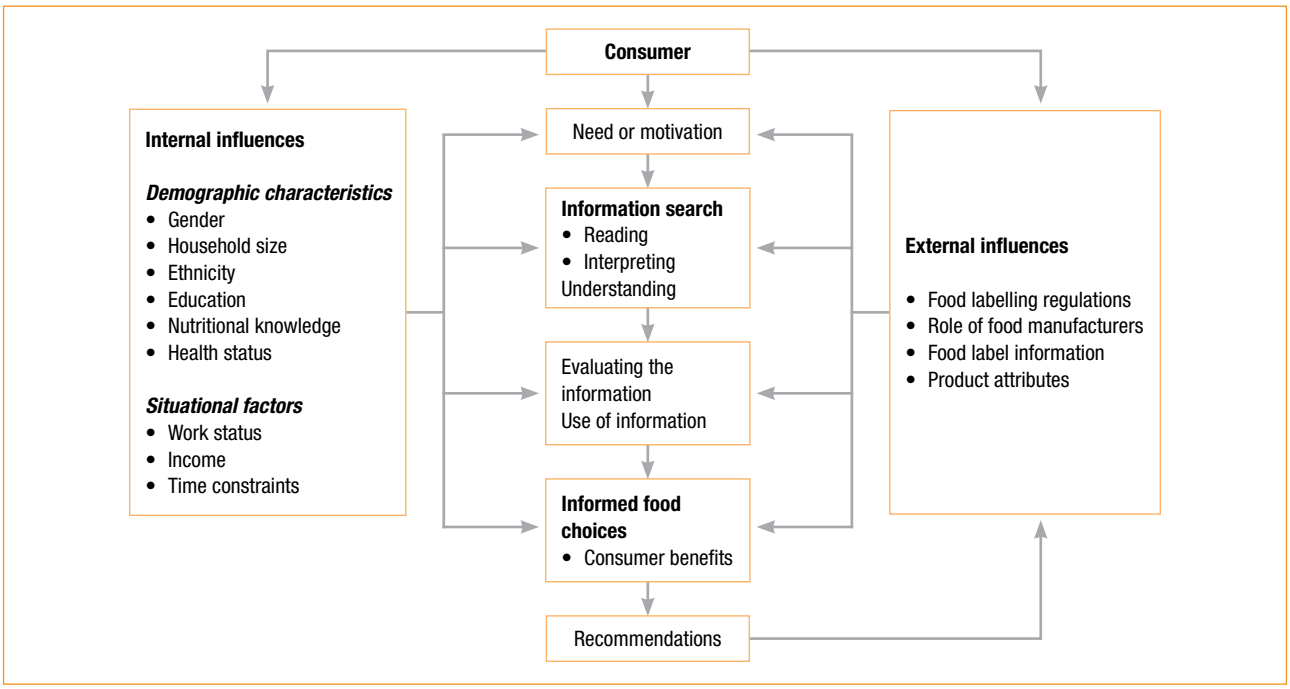


Figure 1: A conceptual framework of consumers' understanding and use of the information on food labels[38]

Netherlands, New Zealand, Norway, Slovenia, the UK, South Africa and the USA:[61]

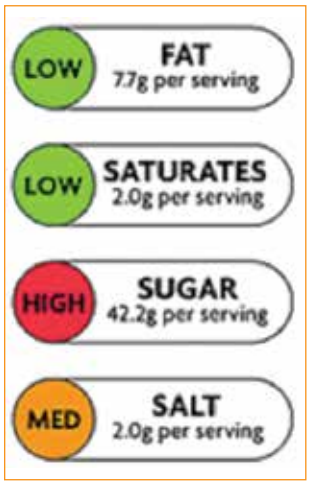
- Single healthy eating symbols (health logos or health endorsement logos) to indicate which foods are healthier. Examples of these include the Swedish green keyhole, heart symbol of the Heart and Stroke Foundation South Africa, Smart Choices logo (developed in the USA, but currently not in use) and the Choice logos from the Netherlands (Figures 2-5).
- Traffic light labelling of nutrients where red, amber and green are used to indicate the levels of key nutrients (Figure 6).
- A hybrid of traffic lights and percentage guideline daily amounts (GDAs) which provides information on the GDA percentages and superimposes traffic light colour onto these (Figure 7).[61]
- Percent GDAs where the percentages of the GDA for key nutrients in a serving/portion or 100g of food is given (Figure 8)

Figure 2: Swedish Green keyhole

Figure 3: Heart symbol

Figure 4: Smart Choices logo

Figure 5: Choices logo



Med: medium

Figure 6: Example of a traffic light label

Med: medium

Figure 7: Example of a hybrid of traffic lights and percentage of guideline daily amount

Figure 8: Example of a guideline daily amount label, given per 100 g

There is an ongoing debate as to the best front-of-pack labelling approach. The evidence suggests that various labelling schemes and different presentations on food products may cause confusion in consumers.[62] Health endorsement logos are considered one potential labelling scheme, and are often underpinned by different approaches to nutrient profiling. These logos appear on foods considered to be healthy, and do not contain numerical values for nutrients since the presence of the logo itself indicates that a product meets the underlying nutrition criteria set by the organisation responsible for the logo scheme.[63] Examples of these types of logos include the Swedish green keyhole,[64] the Smart Choices logo,[65] and the Choices logos.[66] These schemes evaluate both the risk and positive nutrients to determine whether or not the product is deemed healthy in relation to other foods.[63] Examples of health-endorsement logos currently being used in South Africa include the Heart and Stroke Foundation South Africa, Weigh-less, the Glycaemic Index Foundation South Africa and Diabetes South Africa logos. It states in the regulations pertaining to the labelling and advertising of foodstuffs (R146/2010) that only pictorial presentations, marks and logos approved by the Director-General of the Department of Health will be allowed, and in instances where the organisation, association or foundation can provide proof that it is involved in generic health promotion supported by evidence-based nutrition.[3]

Greater effectiveness of labels using graphics, symbols and logos, compared with more traditional nutrition labels which feature quantitative information, has been shown in several studies. Consumers have indicated that they prefer this type of format as it simplifies the nutrition information, although consumers differ in their liking of the various formats.[67,68] Well recognised health endorsement logos may be particularly effective. In general, simplified labels have been shown to promote more accurate nutrition judgements.[27] It was found in a study conducted by Bialkova and Van Trijp that consumers preferred logos when they were present (instead of absent), doubled in size, as well as displayed at the top right of the package. The researchers also found that consumers preferred a single location for the logo on all products.[69]

The Choices programme from the Netherlands is an example of a successfully implemented labelling scheme that uses health-endorsement logos. The programme is a unique multi-stakeholder initiative designed to help consumers to select healthy food options, and to help the food industry to improve its products. It was introduced in the Netherlands in 2006 as a response to the WHO call for the food industry to take an active role in helping to address the growing problem of obesity and diet-related diseases.[66] After the development and implementation of the logo, a mass media campaign was launched to communicate the meaning of the logo to the public. By increasing the visibility of the logo, and through communication campaigns implemented during the first year after the logo was introduced, more than 80% of the population was familiar with the logo after one year of introduction, compared to approximately 30% at the beginning.[70]

However, critics of health-endorsement logos based on specific criteria have argued that the logo may mask relatively high levels of risk nutrients, such as sugar (by fortifying products with positive nutrients, such as fibre) in order to qualify for a logo if the criteria are weak, and not based on the dietary guidelines of that particular country.[71] For example, in the USA, products such as Fruit Loops® and Cocoa Puffs® bore the Smart Choices logo as they met the specified criteria, thus implying that these were healthy foods.

In addition, Andrews et al concluded that health-endorsement logos may be acting as implicit health claims, and lead to a higher subjective evaluation of product healthfulness when compared to the European traffic light logo, or when no logo is present.[72] Feunekes et al also found that the traffic light logo was rated higher than a health-endorsement logo scheme for liking, comprehension and credibility.[73]

Irrespective of which labelling system is favoured (a health-endorsement logo, table, picture or a combination thereof), it has been reported that in order for front-of-pack labelling to be effective and for consumer confusion to be avoided, a single, credible, reliable front-of package nutrition labelling system adopted by food manufacturers and retailers would assist consumers in making smarter food and beverage choices at a glance.[65]

Global nutrition labelling trends

In recent years, the global trend has been a move toward mandatory nutrition labelling, regardless of whether or not a health and/or nutrition claim is made. To reflect this trend, the *Codex Alimentarius* guidelines were adapted in 2012 to recommend that nutrition labelling should be mandatory, even in the absence of health claims. Countries can be grouped into two categories based on their statutory regulations with regard to nutrition labelling (Table I).[74]

According to the European Food Information Council, apart from the mandatory nutrition labelling trend, the standardisation of front-of-pack labels is another global trend. Countries, such as Thailand, have already introduced mandatory front-of-pack labels, while others, i.e. Australia, New Zealand and the USA, are considering it.[74] Currently, front-of-pack labels are not mandatory or standardised in South Africa. However, the new proposed South African labelling regulations, i.e. *Regulations relating to the labelling and advertising of foods: Amendment (No R 429),* include a section on front-of-pack labelling which states that such labelling should be considered as voluntary information, but when front-of-pack information is included on a label, it should comply with certain conditions.[75]

Table I: Overview of mandatory and voluntary nutrition labelling[74]

Mandatory	Voluntary
Countries where nutrition labelling is mandatory, even in the absence of a nutrition or health claim	Countries that provide state-sponsored guidelines to be followed voluntarily. Nutrition labelling is not mandatory unless a health or nutrition claim is made, or unless the food is for special dietary uses
• Argentina • Australia • Brazil • Canada • Chile • China • Columbia • Ecuador • European Union member states • Hong Kong • India • Indonesia • Israel • Malaysia • Mexico • New Zealand • Paraguay • South Korea • Taiwan • United States • Uruguay	• Gulf Cooperation Council countries • Japan • Kenya • Mauritius • Nigeria • Philippines • Singapore • South Africa • Thailand • Turkey • Venezuela

Food and nutrition labelling in South Africa

Since the 1990s, there's been a growing need in South Africa for more up-to-date food labelling legislation to better protect and inform the consumer, and to align with new, emerging scientific nutrition-related research, new trends, and international standards and guidelines, including the *Codex Alimentarius.*[76]

The Department of Health, Directorate: Food Control is responsible for ensuring the safety of food in South Africa. The main functions of the Food Control body include administering food legislation, including the development and publicising of regulations for food labelling, as well as "informing, educating and communicating to industry, consumers, the media, government departments and other stakeholders about food safety and related matters".[77]

In March 2010, the Regulations relating to the labelling and advertising of foodstuffs (R146/2010) were published in the *Government Gazette* by the Department of Health, Directorate: Food Control after two drafts were published for comments in 2002 and 2007.[3] The intention of the new legislation was to close known loopholes which might allow misleading foodstuff labelling and advertising, and to ensure that consumers had access to honest, accurate foodstuff labels. The promotion of healthier eating habits through improved labelling and advertising was one of the key objectives behind these regulations, thereby encouraging better food choices in order to improve public health.[78]

The regulations came into effect two years after publication on 1 March 2012.[76] They were intended to act as interim legislation pending the adoption of more comprehensive labelling legislation at a later stage, and included general and special provisions (with regulations on ingredients, allergens, negative claims and prohibited statements); nutritional information (with regulations on serving sizes and the nutrition information table), as well as nutrient content and comparative claims.[3] Since 2010, amendments to R146 were published in the *Government Gazette* in November 2010 and January 2012.[79,80]

In May 2014, Regulations relating to the labelling and advertising of foods: Amendment (No R 429) was published in the Government Gazette for comment.[75] The new regulations include important proposed changes to the current regulations (No R.146), for example mandatory nutritional information labelling, as well as, amongst other topics, regulations on health claims such as glycaemic index (GI) category and glycaemic load claims, function claims, reduction of disease risk claims, and slimming/weight loss claims based on nutrient profiling. The new proposed regulations also include a section on the commercial marketing of foods and non-alcoholic beverages to children. According to these guidelines, unhealthy food may not be marketed to schoolchildren from grade 0-12, while child actors aged ≤ 18 years, using celebrities or sport stars, cartoon characters, puppets, or any form of computer animation, and the use of competitions, gifts or collectable items, may also not be used to market unhealthy foods to children.[75]

The introduction of nutrient profiling into the labelling regulations

Many comments were received on the draft Regulations governing the advertising and labelling of foodstuffs (R 642/2007). Annexure 6 of the regulation: "Foodstuffs not considered essential for a healthy diet, and for which no nutrient content, glycaemic index, certain comparative, health, slimming or any other claim with a health or nutritional message will be permitted" was commented on by food industry, as well as the scientific community. From the comments received, it was argued that this section should be based on good scientific evidence. Therefore, a nutrient profiling system applicable to all categories of food was proposed. The aim of using a nutrient profiling model as a criteria for making health claims was to avoid a situation whereby the health or nutrition claim on a product could mask the overall undesirable nutritional impact of the product based on its total composition.[81]

According to Rayner et al, nutrient profiling is "the science of categorising foods according to their nutritional composition",[82] while Tetens et al define it as the "categorisation of foods for specific purposes on the basis of their nutrient composition according to scientific principles".[83] Nutrient profiling can be used for different applications, including marketing foods to children, health and nutrition claims, product labelling logos or symbols, information and education, the provision of food to public institutions, as well as the use of economic tools to orient food consumption.[84] The ultimate aim of the model is to help consumers make healthier food choices and to have a "healthier" diet. This should eventually lead to a measurable improvement in the public health diet-related prevalence of NCDs in the country in which it is implemented.[83,85]

A report by Wentzel-Viljoen et al, titled Report: Evaluation of existing nutrient profiling models, recommended that the Australian and New Zealand nutrient profiling model [Food Standards Australia New Zealand (FSANZ)] should be used to determine the eligibility of food items in South Africa to carry any nutrient and/or health claim. In 2012, the recommended model was validated using five different validation approaches. In 2012, the recommended model was validated using five different validation approaches. Based on the evidence and evaluations done, the use of a slightly modified version of the FSANZ model (released in 2012) is recommended to be used in South Africa as the screening tool to assess if a food product is eligible to carry a nutrient and/or health claim.[78]

The FSANZ model is based on the nutritional value per 100 g of food, and three categories are used (Table II). Baseline points are calculated based on the cut-off points provided for energy, saturated fat, added sugar and sodium. Modifying points are calculated after taking into consideration certain conditions, for example, the fruit, vegetable, nut and legume content of the food item, and its fibre and protein content. The final score for a food item is calculated by subtracting the modifying points from the baseline points.[78] A nutrient profile calculator is available on the website of the Department of Health, South Africa at http://www.health.gov.za/phocadownload/FoodInfor/NPC_NWU.html

For example, if the number of points are calculated for a common brand of low-fat milk (Category 1) using the nutrient profile calculator provided on the Department of Health website, the following information is recorded: average energy content per 100 g; total sugars per 100 g, saturated fatty acids per 100 g, and sodium per 100 g. These values determine the baseline points for the product. The particular low-fat milk used in this example received a baseline score of 1. Information on protein per 100 g and fibre per 100 g is recorded to determine the number of modifying points. The low-fat milk in this example received a score of 2. When subtracting the modifying points (2) from the baseline points (1), this product received a final score of –1. Therefore, this food item is eligible with respect to making a health and/or nutrition claim. Thus, low-fat milk passes the screening test.

Table II: Categories and the scoring of food items according to the Food Standards Australia New Zealand model[86]

Food items	Category 1	Category 2	Category 3
	Beverages, excluding breast milk	Any food other than those included in Category 1 and 3	Cheese and processed cheese with a calcium content of ≥ 320 mg/100 g, edible oil, edible oil spreads, and margarine and butter
Final score	≤ 1, for food items to be eligible	≤ 4, for food items to be eligible	≤ 28, for food items to be eligible

The way forward

Current global mortality from NCDs remains unacceptably high, and is on the increase. NCDs account for an estimated 43% of all deaths in South Africa.[23]

A population-wide intervention, such as the promotion of a healthy diet through the provision of adequate nutrition information on food labels, as well as the education of consumers to better understand a nutrition label, is crucial in helping to address the NCD dilemma in South Africa. However, this type of intervention, together with other interventions aimed at addressing the NCD burden, can only be successful with commitment from government by way of appropriate policies, education campaigns and the necessary resources.

Nutrition information, including the nutrition information table, list of ingredients, claims and logos, can help consumers to make healthy food choices. However, it is important to have a better understanding of the South African consumer and his or her nutrition label knowledge and understanding, the use or non-use of nutrition labels, and factors which influence purchasing behaviour, in order to plan these interventions successfully.

Consumer knowledge, and the use and understanding of nutrition labelling, has been extensively investigated in the international literature. However, the majority of these investigations were conducted in developed countries. Therefore, additional research on the impact of nutrition labels in developing countries is necessary and should be a priority.[27] South Africa, with an estimated 55 million citizens in June 2015,[87] has a unique, diverse population with different cultural backgrounds, and with income inequality differing with respect to needs, households, consumption, environmental backgrounds, languages and ethnicity, and consequently, also behaviour.[88]

Since the implementation of the new food labelling regulations in March 2012, research has been carried out to determine whether consumers in South Africa use and understand nutrition labels. A few exploratory studies, in which relatively small samples were used,[4,37,38] have been conducted in the past few years. They all recommended that research on the topic should be conducted on a larger scale. Bosman et al conducted a national study to determine consumers' use and opinions on nutrition labelling.[35] However, a comprehensive investigation, in which quantitative and qualitative techniques are employed, is necessary to fully understand the complexity of nutrition label knowledge, its use and understanding within different socio-economic and ethnic groups, and its impact on purchasing behaviour. Reasons for non-label use, as well as factors that may influence those that do not read label information to purchase more healthy food products should also be explored. This is necessary in order to make useful recommendations to improve the nutrition labelling of food products and nutrition labelling strategies.

The food industry, health professionals and consumers anxiously await the outcome of the new proposed amendments to the regulations which relate to the labelling and advertising of foods in South Africa. Many changes, challenges and opportunities in food labelling, and specifically nutrition labelling, are expected. However, this is an ideal time in which to promote the use and education of nutrition labels by health professionals to consumers. It is also necessary to actively partake in research on how to use the information provided to the consumer in order to assist him or her to make healthier food choices.

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