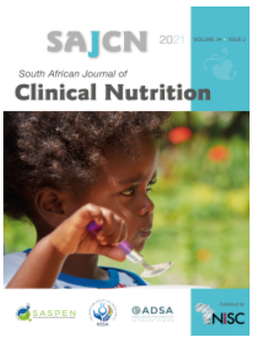

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ARTICLE

Should fast-food nutritional labelling in South Africa be mandatory?

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Objectives: This study aimed to: (i) determine the proportion of fast-food restaurants that provide nutritional information, (ii) describe the nutritional information of similar food items and meal combinations across the fast-food restaurants, (iii) and use a graphical labelling system to describe these data.
Methods: Thirty-one of the biggest fast-food restaurants in South Africa were included to estimate the proportion of those that provided nutritional information on their websites/outlets. Energy, protein, fat, carbohydrate, salt and sugar nutrient compositions were compared for similar food items (burger or pizza), and a meal combination that included burger/pizza, medium-size fried chips and a sugar-sweetened beverage. The UK Traffic Light labelling system was used to compare fat, salt and sugar across restaurants.
Results: Only 58% of the restaurants provided some form of nutritional information. While all burgers were high in protein, some were also high in fat, salt and sugar, as indicated by percentages of the nutritional reference ranges above 30%. Similarly, this was the case for pizzas. All meal combinations particularly exceeded the total recommended energy, carbohydrates, sugar and salt content, and most also exceeded the recommended fat content.
Conclusions: Consumption of popular South African fast foods may disproportionally contribute to the daily intakes of total energy, fat, salt and sugar, especially when consumed as combination meals including fried chips and sugar-sweetened beverages.
Recommendations: Consumers should limit their fast-food intake and avoid eating meal combinations. The South African Government's commitment to curb the rise of non-communicable diseases should consider regulations that mandate nutritional labelling of fast foods, to assist consumers in making informed dietary choices.

Keywords: Fast food, menu labelling, nutritional labelling, non-communicable diseases, obesity

Introduction

The high prevalence of nutrition-related non-communicable diseases (NCDs), such as diabetes, hypertension, cardiovascular diseases and certain cancers, remains a major health burden and leading cause of mortality.[1] The increased prevalence of these diseases in South Africa is largely due to rapid urbanisation, which associates with nutrition transition to ultra-processed and high-energy dense foods and concomitant elevated obesity rates.[2] The association between urbanisation and the observed nutrition transition could be due to the growing expansion of, and increased access to, large modern food retailers and fast-food restaurants, which are mostly located within urban areas.[3] Fast foods can be defined as convenient foods that are quickly prepared and served from outlets that include restaurants, cafés and takeaways. Examples of these foods include burgers, fried (potato) chips, chicken, fish and pizzas, which are convenient to obtain at relatively low prices but are generally high in energy, fat, sodium and sugar.[4]

The South African government is committed to curbing the rise of NCDs and has introduced several public health interventions attempting to reduce the negative impacts of unhealthy eating.[5] These include national regulations that focus on reducing added salt and sugar at the manufacturing and consumption level, and public health interventions to decrease the consumption of processed foods.[5–7] However, it may be difficult to monitor these national regulations for food items that are not required to provide nutritional labelling.

Nutritional labelling can be an effective way of assisting consumers to make healthier food choices. Although the South African government published regulations relating to foodstuff labelling and advertising in 2010, in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972),[8] some major concerns regarding their approach to nutritional labelling remain. Certainly, the regulations are commended for their comprehensive guidelines, which include recommendations for indicating percentages for Nutrient Reference Values (%NRVs). The %NRVs are important for consumers to avoid exceeding the daily recommended nutrient intakes. Most people eat at least three meals per day, with small snacks in between.[9] Hence, %NRV > 30% per serving portion is generally considered to be high content, as it makes it challenging not to exceed the respective daily recommended intake. While numerical nutritional information such as the %NRVs is useful for consumers who know how to interpret it, evidence suggests that the front-of-pack (FOP) nutritional labelling formats may be better interpreted by most South African consumers.[10] FOP nutritional labelling formats use graphical information such as warning labels and colours in assisting consumers to quickly interpret the nutritional content. An example of an FOP format is the 'Traffic light labelling' system, which has been adopted by several countries including Australia and the United Kingdom, and uses traffic-light colours to indicate whether salt, sugar and fat content are high (red), medium (orange) or low (green).[11]

However, according to the current South African regulations, when no claim is made about the food product (such as 'high

in fibre', 'low in fat'), providing nutritional information is not mandatory.[8] Consequently, making healthier food choices at the point of purchase is not always an option for South African consumers. The regulations also indicate that, unless a claim has been made, ready-to-eat foodstuffs that are prepared and sold on the premises are exempt from the nutritional labelling requirements. As this food category primarily includes ready-to-eat foods, fast-food outlets are not obligated to list the nutritional information of their products. As a result, access to nutritional information is not readily available to consumers, making it difficult for consumers to make informed choices.

There are no studies that have investigated nutritional labelling of fast foods in South Africa. However, recent findings suggest a positive association between access to fast-food outlets and the prevalence of obesity in South Africa.[3] Hence, the aim of this study was threefold: (i) to determine the proportions of fast-food restaurants that provide nutritional information, (ii) to describe the nutritional information of similar food items and meal combination across the fast-food restaurants, (iii) and to use a graphical labelling system to describe these data.

Methods

Restaurant selection

The sample frame for restaurant selection was a list of the biggest fast-food restaurants in South Africa that had at least 20 outlets in 2018 (Figure 1, $n = 31$), as indicated in the BusinessTech 2017 and 2018 annual reviews (www.bussinetech.co.za). Steps used in the restaurant selection process, for each of the three study objectives, are summarised in Figure 1.

Ethics

Public open accessible data (nutrition information) from the fast-food outlet websites or in-stores were used. Waivered ethics request was approved by Human Ethics Research Committee (Medical) of the University of the Witwatersrand, Johannesburg, South Africa (W-CBP-210716-01).

Fast-food restaurants that provide nutritional information

To determine the proportion of restaurants that provided nutritional information on their products to the public, all 31 fast-food restaurants were included. The official websites of all these fast-food restaurants were accessed from the April 26 to July 21, 2021, to search for whether or not the nutritional information was provided to the public. To confirm the unavailability of the nutritional information, the fast-food restaurants that did not present nutritional information on their websites were directly contacted via email or telephone or by visiting one of their outlets. From these data, the proportion of fast-food restaurants that provided nutritional information to the public was estimated. Restaurants that could not provide nutritional information for their food items were excluded from further downstream analyses (see Figure 1).

Typical nutritional information

From the remaining 18 restaurants, one of the following food items were selected as the similar fast food from their respective menus: (i) beef/chicken burger (single patty) with cheese, (ii) medium margherita (or pepperoni), or (iii) hake burger. Where more than one of the listed food items were offered by the restaurant, the first item on the above list was selected. Nutritional information as presented on the websites, including energy, protein, fat, carbohydrates, salt/sodium and sugar, per portion and/or per 100 g serving, was extracted for the respective food item. Where sodium and not salt values were presented, the sodium content was multiplied by 2.5 to estimate the equivalent salt content.[12] As the food items are often advertised and bought as meal combinations (burger/pizza, fried chips, and a cold drink), the above-mentioned nutritional data were also extracted for medium fried chips (from the respective website) and 440 ml Coca-Cola (from the nutritional labelling of the bottle in June 2021).

The extracted data were collated into a table to compare the nutrient contents per serving portions, as well as per 100 g portions (where data were available). The %NRVs were calculated as follows: (nutrient value per portion/NRV for individuals four years and older) x 100%. To maintain confidentiality and anonymity all brand names, restaurants and their corresponding food items were coded with letters from A to L.

Front of pack (traffic light) nutritional labelling

The study used the United Kingdom Traffic Light labelling system, a type of graphical labelling method that assigns green, amber or red, to rate specific nutrients (e.g. sugar, fats and salt) as low, medium or high, respectively.[11] First, for all fat, sugar and salt values that were > 30% of the NRV per portion, a red colour was assigned to indicate high content. Subsequently, the criteria listed in Table 1 were used to assign the traffic-light colours to nutrients that had values ≤30% of the NRV. Fat, sugar, and salt were assigned green if the item had values less or equal to 3.0, 5.0 and 0.3 g per 100 g portions, respectively. Amber was assigned when the nutritional values per 100 g portions were in the range of > 3.0–17.5 g for fat, > 5.0–22.5 g for sugar, and > 0.3–1.5 g for salt. Red was also assigned for all nutritional values per 100 g that were above 17.5 g for fat, 22.5 g for sugar and 1.5 g for salt.

Results

Fast-food restaurants that provide nutritional information

Of the 31 restaurants included in the present study, only 16 (51.6%) had nutritional information presented on their official websites. The nutritional data for two of the restaurants were not presented on their websites and not made available for this study during the data extraction process. However, their head office indicated that the information is made available to consumers on request. Therefore, in total 18 out of 31 restaurants (58.1%) had their nutritional information available to the public.

Typical nutritional information

The nutritional data are presented as values per serving portion of energy, protein, fat, carbohydrates, salt and sugar for the similar food items, medium fried chips, and the 440 ml sugar-sweetened beverage in Table 2. The table also shows data on the total nutritional values for meal equivalents, which were calculated by combining the nutritional values for the burger/pizza, medium fried chips and the 440 ml sugar-sweetened beverage (Table 2). Where data were available, Table 3 shows the nutritional information of these food items per 100 g/ml portion. Corresponding to Table 2, the %NRVs for all fast-food items and meal equivalents are shown in Figure 2.

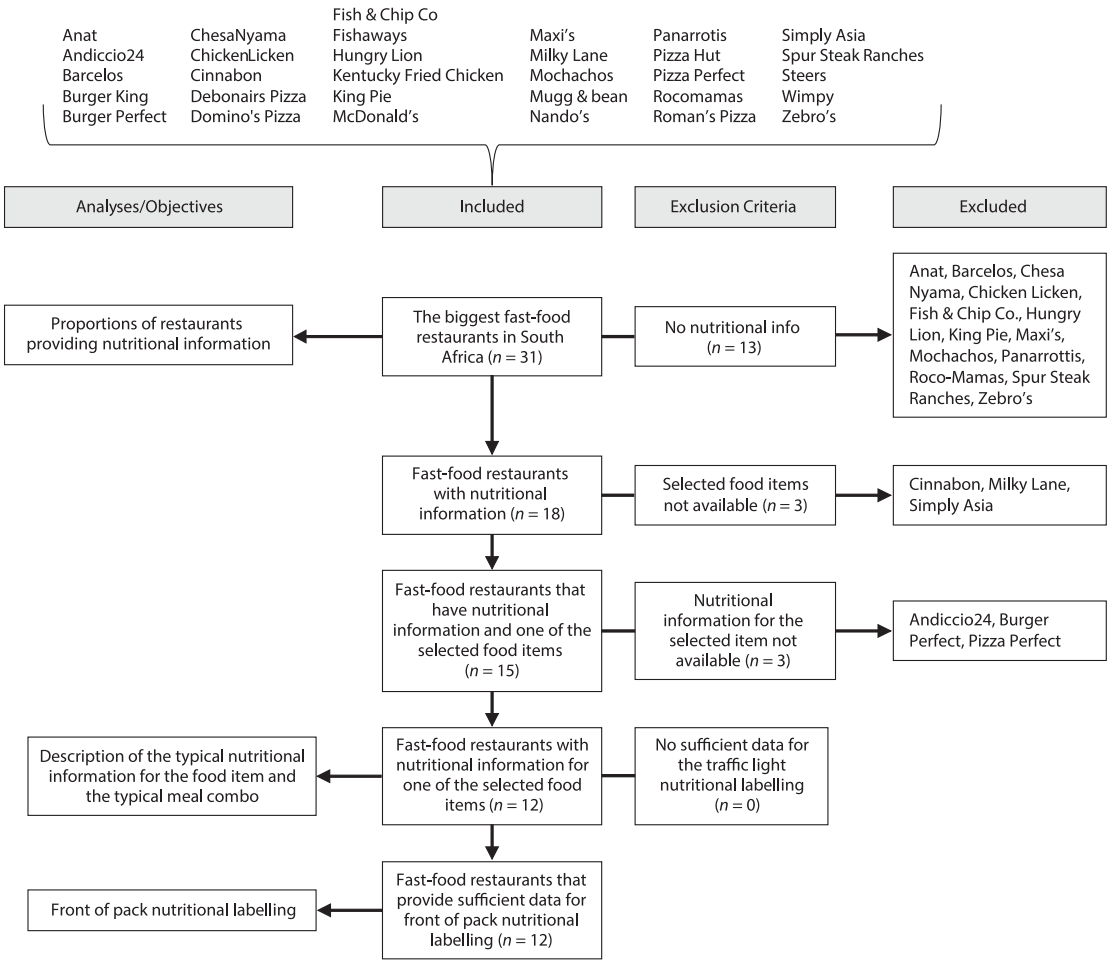

Figure 1: Fast-food restaurant selection used for each study objective. Info: information; *n*: number of restaurants; KFC: Kentucky Fried Chicken. Meal combo: a typical meal combination containing burger/pizza, fried chips and a 440 ml Coca-Cola.

Energy

The %NRV for energy varied widely between burgers (13.6–55.3%), pizzas (39.0–45.87%), fried chips (11.9–37.2%) and meal equivalents (34.1–89.3%). Three out of eight burgers had %NRV for energy above 30%, and these were from outlets G (36.4%), K (32.1%) and L (55.3%). In contrast, all pizzas had % NRV for energy that was above 30%, and these were 39.0% for outlet B, 44.3% for outlet C, 45.6% for outlet I and 43.6% for outlet J. Four out of the nine fried chips had %NRV for energy that was above 30%, and these were from outlets C (34.3%), F (33.3%), I (35.0%) and K (37.2%). All presented meal equivalents had %NRVs for energy that were above 30%, but none exceeded the recommended daily energy intake value (8 400 kJ per day).

Protein

The protein content also varied among the selected fast-food items, with %NRV range of 32.2–96.2% for burgers, 58.4–88.8% for pizzas, 4.8–20.2% for fried chips and 39.6–105% for meal equivalents. While the protein %NRV for all burgers, pizzas and meal equivalents were above 30%, none of the listed fried chips were above 30% of the NRV for protein. Notably, the meal equivalent from outlets G and I exceeded the recommended daily protein intake value (50 g per day).

Table 1: Criteria used to assign traffic-light colours for food items with values ≤ 30% (per portion) of the NRV

Item	Green	Amber	Red
Fat	≤ 3.0 g/100 g	> 3.0 g to ≤ 17.5 g/100 g	> 17.5 g/100 g
Sugar	≤ 5.0 g/100 g	> 5.0 g to ≤ 22.5 g/100 g	> 22.5 g/100 g
Salt	≤ 0.3 g/100 g	> 0.3 g to ≤ 1.5 g/100 g	> 1.5 g/100 g

Adapted from the UK Traffic Light guidelines.[11]

Fat

The total fat %NRV ranged between 11.4–84.3% for burgers, 33.5–55.6% for pizzas, 14.6–88.1% for fried chips and 26.0–129.7% for meal equivalents. Four out of eight burgers had % NRV for fat that was above 30%, and these were from outlets D (41.0%), G (60.1%), K (41.6%) and L (84.3%). All included pizzas had fat %NRV that was above 30%. Likewise, the majority of fried chips (5 out of 9) had fat %NRV that was above 30% and these were from outlets C (47.6%), D (49.3%), F (46.6%), I (47.1%) and K (88.1%). All meal equivalents, except the one from outlet A (%NRV for fat = 26.0%), had fat %NRV that was above 30%. Notably, the meal equivalent from outlet K exceeded the recommended daily intake for fat (< 70 g per day).

Carbohydrates

The %NRV of carbohydrates ranged at 10.0–41.3% for burgers, 34.2–45.0% for pizzas, 12.8–36.0% for fried chips and 41.2–97.2% for meal equivalents. Only one out of eight burgers had a %NRV that was above 30% for carbohydrates and this was from outlet L (41.3%). Conversely, all pizzas had %NRV for carbohydrates that was above 30%. Three out of nine of the

Table 2: Nutritional content of popular South African fast foods (per portion)

		Energy (kJ)	Protein (g)	Fat (g)	Carbohydrates (g)	Salt (g)	Sugar (g)
Nutrient Reference Value (NRV) for ≥ 4-year-old individuals[8]		**8 400**	**50.0**	**< 70.0**	**260.0**	**< 6.0**	**90.0**
Sugar-sweetened beverage		720.0	0.0	0.0	42.0	0.0	42.4
A	Burger A	1 144.0	17.4	8.0	33.0	0.0	8.0
	Medium chips A	1 000.1	2.4	10.2	33.4	0.2	0.8
	Meal equivalent A*	2 865.1	19.8	18.2	108.4	0.2	51.2
B	Pizza B	3 277.0	37.6	23.4	106.7	0.8	NS
C	Pizza C	3 724.0	29.2	29.6	112.8	3.0	12.0
	Medium chips C	2 880.0	8.9	33.3	87.8	5.3	0.8
	Meal equivalent C*	7 324.0	38.1	62.9	242.6	8.3	55.2
D	Burger D	2 025.1	17.5	28.7	37.0	NS	NS
	Medium chips D	2 297.0	6.0	34.5	51.9	NS	NS
	Meal equivalent D*	5 042.1	23.5	63.2	130.9	NA	NA
E	Burger E	1 913.3	34.8	18.0	37.9	3.5	5.5
	Medium chips E	1 398.0	4.1	16.2	41.5	1.0	0.0
	Meal equivalent E*	4 031.3	38.9	34.2	121.4	4.5	47.9
F	Burger F	1 355.6	16.1	13.5	33.4	1.3	6.9
	Medium chips F	2 799.1	10.1	32.6	80.0	1.0	2.4
	Meal equivalent F*	4 874.7	26.2	46.1	155.4	2.3	51.7
G	Burger G	3 056.1	48.1	42.1	38.5	3.5	NS
	Medium chips G	1 423.0	4.4	19.0	37.0	0.5	NS
	Meal equivalent G*	5 199.1	52.5	61.1	117.5	4.0	NA
H	Burger H	1 723.0	37.0	15.0	26.0	2.5	2.0
	Medium chips H	1 233.0	4.0	14.0	39.0	0.3	0.0
	Meal equivalent H*	3 676.0	41.0	29.0	107.0	2.8	44.4
I	Pizza I	3 840.9	44.4	29.4	117.0	4.8	5.4
	Medium chips I	2 937.2	7.8	33.0	93.6	3.5	0.1
	Meal equivalent I*	7 498.1	52.2	62.4	252.6	8.3	47.9
J	Pizza J	3 661.5	42.4	38.9	88.9	2.3	7.8
K	Burger K	2 692.8	31.8	29.1	65.0	5.3	NS
	Medium chips K	3 128.5	6.6	61.7	43.8	3.3	NS
	Meal equivalent K*	6 541.3	38.4	90.8	150.7	8.6	NA
L	Burger L	4 641.8	42.1	59.0	107.3	6.5	52.2

*Meal equivalent = burger/pizza + sugar-sweetened beverage + medium chips; NS: not specified; NA: not applicable (could not be calculated because of missing data for medium chips). [8]The NRV values are based on the South African Regulations Relating to the Labelling and Advertising of Foodstuffs (https://www.gov.za/sites/default/files/gcis_document/201409/32975146.pdf).

fried chips that had %NRV for carbohydrate that was above 30%, and these were from outlets C (33.8%), F (30.8%) and I (36.0%). All presented meal equivalents had %NRVs for carbohydrates that were above 30% but none exceeded the daily recommendation for carbohydrates (260 g per day).

Salt

The %NRV of salt ranged between 0–108.3% for burgers, 13.3–80.0% for pizzas, 3.3–88.3% for fried chips, and 3.3–143.3% for meal equivalents. Five out of seven burgers had %NRV for salt that was above 30%, and these were from outlets E (58.3%), G

Table 3: Nutritional content of popular South African fast foods (per 100 g)

	Item	Energy (kJ)	Protein (g)	Fat (g)	Carbohydrates (g)	Salt (g)	Sugar (g)
Sugar-sweetened beverage		180.0	0.0	0.0	11.0	0.0	10.6
A	Burger A	994.8	15.1	7.0	28.7	0.0	7.0
	Medium chips A	629.0	1.5	6.4	21.0	0.1	0.5
F	Burger F	1 100.4	13.0	12.0	28.0	1.5	6.2
	Medium chips F	1 238.5	3.0	15.0	37.0	1.3	0.5
H	Burger H	681.0	14.0	6.0	10.0	1.0	1.0
	Medium chips H	850.0	3.0	10.0	27.0	0.0	0.0
I	Pizza I	949.8	10.9	7.2	28.9	1.1	1.3
	Medium chips I	1 175.7	3.1	13.2	37.5	1.4	0.0
J	Pizza J	1 137.1	13.2	12.1	27.6	1.0	2.4

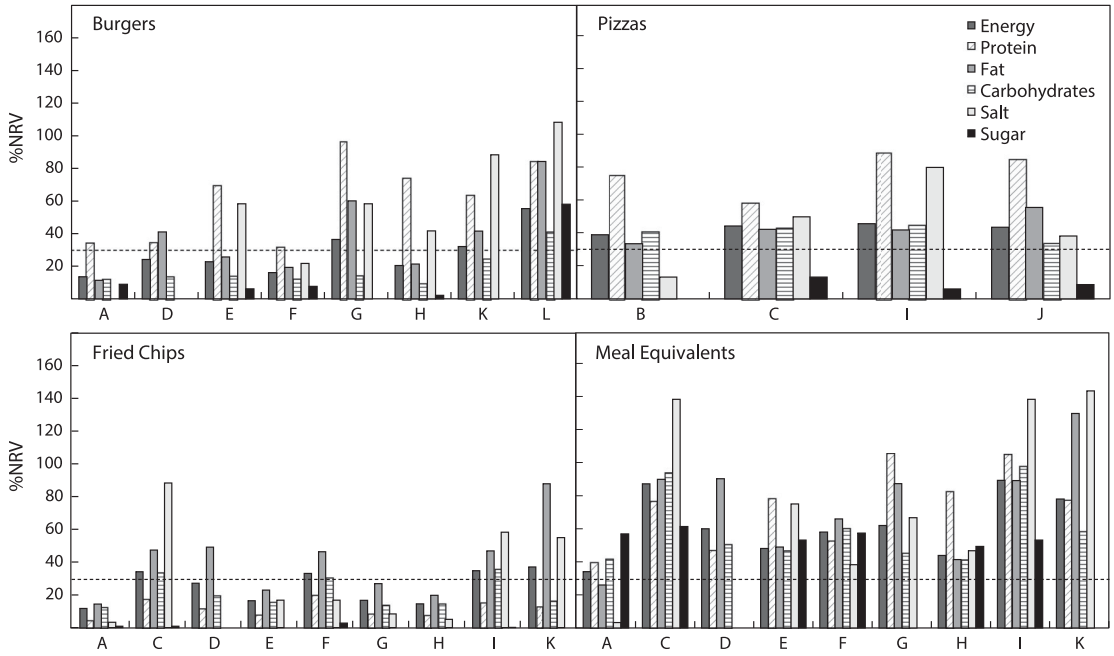

Figure 2: A comparison of %NRVs for energy, protein, fat, carbohydrates, salt and sugar per serving portion. The %NRVs were calculated as %NRV = nutrient value per portion/NRV for individuals (4 years and older) × 100%.

(58.3%), H (41,7%), K (88.3%) and L (108.3%). Likewise, three out of four pizzas had %NRV that was above 30% and these were from outlets C (50.0%), I (80.0%) and J (38.3%). Three out of eight fried chips had %NRVs for salt that were above 30% and these were from outlets C (88.3%), I (58.3%) and K (55.0%). All meal equivalents, except the one from outlet A, had %NRVs for salt that were above 30%, of which those from C, I and K exceeded the daily recommended intakes for salt (< 6 g per day).

Sugar

The range for %NRV of sugar was 2.2–58.0% for burgers, 6.0–13.3% for pizzas, 0–2.7% for fried chips and 49.3–61.3% for meal equivalents. Only one out of four burgers, Burger L (58.0%), had %NRV for sugar that was above 30%. None of the pizzas (0/3) and fried chips (0/6) had %NRV for sugar that was above 30%. In contrast, all included meal equivalents had %NRV for sugar that was above 30%, but none exceeded the daily recommended intake.

Traffic light colour assignment for front of pack nutritional labelling

To summarise fat, salt and sugar content for the fast-food items, the nutritional data presented in Tables 2 and 3 and Figure 2 were used to assign the traffic light colours shown in Table 4.

Discussion

Findings from the present study suggest that consumption of fast foods may contribute disproportionally to daily nutrient intakes for energy, fat, salt and sugar, especially when eaten as meal combinations, as these often exceeded the daily recommended intakes for a meal. Therefore, fast food nutritional labelling should be mandatory for South African consumers to make informed healthy diet choices. This study estimated that more than 58% of the popular fast-food restaurants had readily available nutritional information for public access. However, this may not suggest that the majority of the South African fast-food industry acknowledges the importance of nutritional labelling, as a third of these (6 out of 18) were international franchises. In countries like the United States, Canada, Australia, Ireland, Saudi Arabia, South Korea, Taiwan and United Arab Emirates, provision of fast-food nutritional information is mandatory.[13–16] Therefore, it is more probable that nutritional information for some of the South African restaurants had been compiled in response to regulations from other countries, where these restaurants also operate.

The United States government was the first to mandate restaurants to provide nutritional labelling of their products, which became effective from May 2018. Their regulations require labelling the energy content (as calories) of standard food items that are listed on menus and menu boards, for restaurants with 20 or more outlets that operate under the same name and provide the same menu items.[14] The restaurants are also obligated to have information such as total fat, saturated fat, trans fat, cholesterol, sodium, total carbohydrates, dietary fibre, sugars and protein content available on the premises upon consumer request. In support of the effectiveness of fast-food labelling in the fight against obesity, recent evidence suggested that United States restaurants have already started reducing the energy content of their food products in response to these regulations.[13] Similarly, the United Kingdom government has recently announced that restaurants in England with 250 or more employees will be required to display energy contents of their non-prepacked foods from April 2022.[17]

Certainly, high concentrations of the key macronutrients are thought to explain the negative impact of fast foods on the fight against obesity and related NCDs. For example, excess consumption of energy, fat and sugars leads to excess weight gain and ultimately increases the risk of developing NCDs.[18] Likewise, exceeding the daily recommended intake for salt increases the risk of developing hypertension.[19] In the present study, the high energy content observed for all pizzas and meal equivalents suggest that it is more likely for those who consume these fast-food items to exceed the daily recommended energy intake, particularly energy

Table 4: Assignment of traffic-light colours to the nutrient content of popular South African fast foods

Food items	Outlet	Fat	Salt	Sugar
Burgers	A			
	D			
	E			
	F			
	G			
	H			
	K			
	L			
Pizzas	B			
	C			
	I			
	J			
Fried chips	A			
	C			
	D			
	F			
	H			
	I			
	K			
Meal equivalents	A			
	C			
	D			
	E			
	F			
	G			
	H			
	I			
	K			

(Red: high; Amber: medium; Green: low; Light grey: colour could not be assigned due to missing information).

attributed to high fat content.[20] The present study also suggested that while the sugar content was relatively low in most burgers and pizzas, eating either a burger or a pizza in combination with fried chips and a sugar-sweetened beverage may be associated with high consumption of added sugars. In contrast to the above, the salt content varied widely in similar fast-food items, likely because some restaurants added salt in their products while others allow consumers to add their own salt. However, whether the information about pre-added salt is shared with consumers during purchase remains to be investigated. The amount of salt that is added by South African consumers to their fast-food products also needs further research.

Notably, South African consumers often acknowledge the importance of eating healthily and using nutritional information to make healthier dietary choices.[21] However, in the absence of nutritional labels, consumers tend to estimate nutrient content poorly,[22] as they are forced to rely on portion sizes[23] and on the perception that similar food types contain similar nutrients.[24] Converse to this notion, in the present study, is that nutrients varied widely amongst similar fast-food items (burgers, pizzas and chips), further highlighting the importance of providing nutritional labelling. Fast-food consumers may benefit from introduction of a government regulation/law that mandates nutritional labelling of fast foods in South Africa. The nutritional information of fast foods can be used by consumers to make healthier dietary choices and in turn assist the government in the fight against obesity and related NCDs.

Limitations and future studies

The present study has some limitations. All presented nutritional information was self-reported on the restaurants' websites and, thus, the accuracy of these data has not been verified. Nevertheless, the nutritional information was used as presented on the official websites from where the consumers would extract and interpret the nutritional content. The study focused only on the largest South African fast-food restaurants and informal outlets were not included. Studies have suggested that consumption of fast foods from informal outlets (e.g. quarters, vetkoeks, etc.) may be high among South Africans.[25] However, these informal fast-food outlets are unlikely to have compiled nutritional information. This study could not include the fast-food restaurants that do not provide their nutritional information to the public. Hence, it is still unknown whether foods from these restaurants systematically differed in nutritional content from those that voluntarily shared the data. Likewise, the study could not investigate the fibre and the impact of refined carbohydrates, as fibre content was not provided by the majority of the restaurants. Another limitation was that the values for portion sizes were not provide by the restaurants. Hence, these could not be compared in the present study. Moreover, evidence is still needed to confirm the value of fast-food nutritional information for South African consumers to make informed health decisions. Future studies should also assess whether the nutritional information that is provided by some South African fast-food restaurants, on a voluntarily basis, can easily be accessed and correctly interpreted by the South African public.

Conclusions

The present study suggests that consumption of popular South African fast foods such as burgers and pizzas may disproportionately contribute to the daily intakes of total energy, fat, salt and sugar, especially when consumed as combination meals with fried chips and cold drinks. Furthermore, it is important

that accessible and easily understood nutritional information is provided to consumers to increase their awareness and consideration around dietary choices.

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