The contribution of portion size of processed pork to total salt intake in the diet

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Background

It is widely accepted that reducing salt consumption will be beneficial to one's health (Webster, et al., 2011). However, the average salt intake in South African (SA) adults, at 8.1 g/day, is higher than the 4-6 g/day recommended by the World Health Organization (Bertram, et al., 2012). This has prompted the South African Department of Health to take a legislative route towards lowering salt content in South African foods by publishing the salt reduction regulations (R214) in March 2013. A two-phase step-change process was chosen to get consumer palates used to the taste of processed products with less salt. The first targets need to be reached by June 2016 and the second targets by June 2019 (Department of Health, 2013).

According to Charlton, et al. (2005) meat and meat products (such as processed meat products) is the second largest contributor to total reported dietary sodium intake (20.3% to 23.6% %) in South Africa (Charlton, et al., 2005).

This study aims to provide information on the contribution of processed pork products as defined by the South African National Standard (SANS 885) to total salt intake in the diet.

Estimating sodium intake

To estimate the contribution of a food group or a subclass (such as processed pork meat products) to the daily dietary sodium intake, it is necessary to firstly determine the sodium content of the food product. However, only measuring sodium content in milligrams per 100 g does not take into account either portion size or the likely frequency of consumption.

Food Composition Data

An analysis of the available sodium content data of processed pork meat products is presented in figure 1. The analysis was performed using the Condensed Food Composition Tables of South Africa (Wolmarans, et al., 2010), data provided by the South African Meat Processors Association (SAMPA) and nutrition labels from processed products in selected supermarkets. Analyses were conducted on 58 processed pork meat products divided into categories and also classes as indicated in SANS 885.

However, many such foods are typically consumed in portion sizes well below 100 g. The proposed reference amounts for single serving sizes is based on reference amounts customarily consumed, and these vary from 15 g for cooked bacon (60g uncooked) to 60g for cooked patties (100g uncooked).

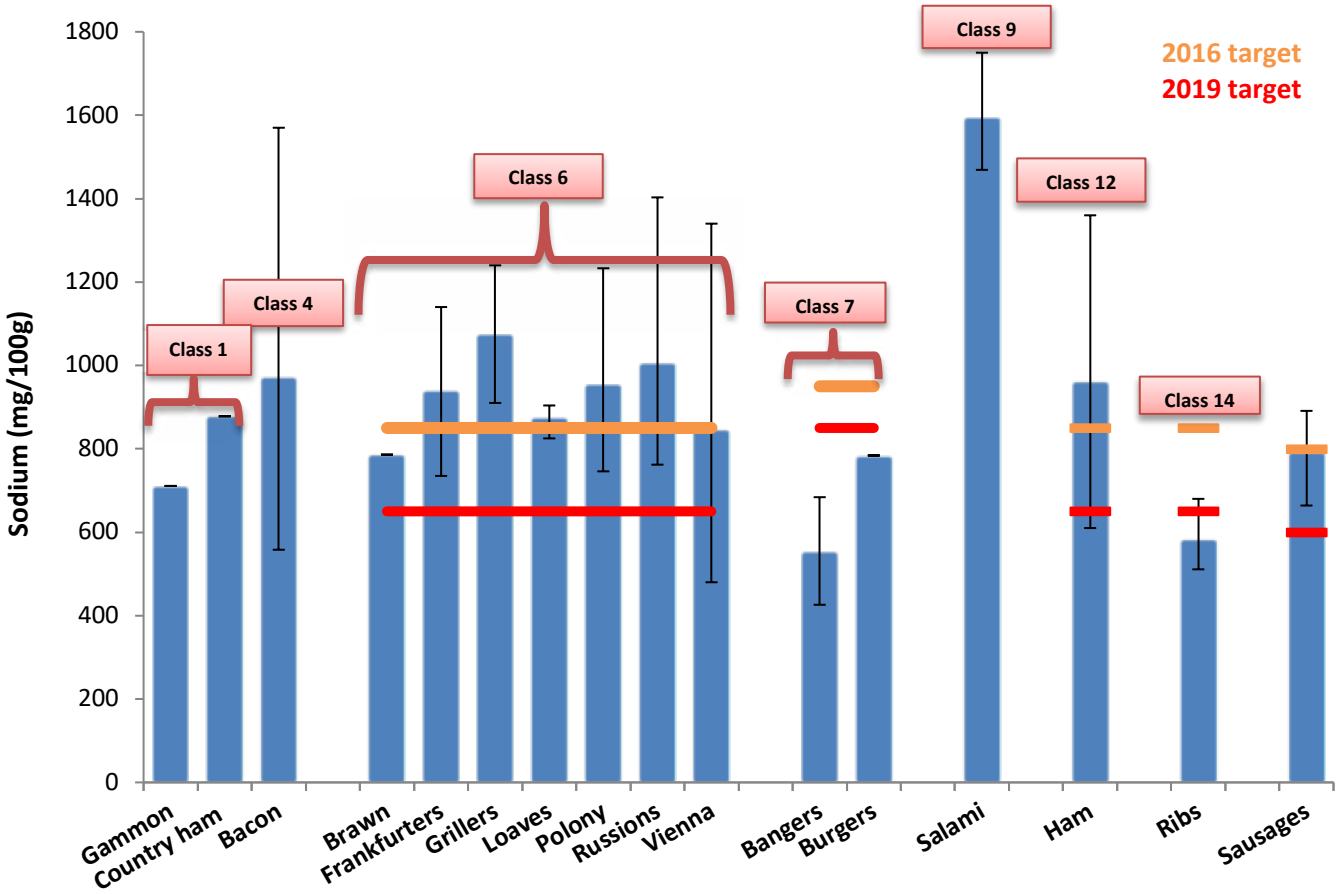

Figure 1: Sodium content (mg/100g) of different uncooked processed meat products

Serving size / portion size

Discriminating between portion and serving sizes and determining the appropriate number of serving sizes to consume on a daily basis are key to maintaining a healthy diet. For the purpose of this study the reference amounts for single serving sizes as proposed in Guideline 11 of the new draft regulations relating to the labelling and advertising of foodstuffs R429 (as indicated in Table 1) was used to determine sodium intake for processed meat products (Department of Health, 2014).

Table 1: Reference amounts for single serving sizes (Department of Health, 2014)

Meat Product	Reference amount / serving
Pork rinds and bacon	54 g uncooked 15 g cooked
Beef, pork and poultry breakfast strips	30 g uncooked 15 g cooked
Dried meat and poultry, such as jerky, dried beef or parma ham, as well as sausage products with a water activity of 0.90 or less, such as salami, dried thuringer or cervelat	30 g
Luncheon meats, such as polony, liver sausage, ham and cheese loaf; pâté; meat pie fillings	75 g uncooked 55 g cooked
Sausage products, such as linked sausage, Vienna sausage, wieners, breakfast	75 g uncooked

sausage, frankfurters, pork sausage, bratwurst, smoked sausage, pepperoni, knackwurst	55 g cooked
Cuts of meat and poultry without sauce, and ready-to-cook cuts, with or without breading or batter, including marinated, tenderized and injected cuts	125 g raw 100 g cooked
Patties, cutlettes, chopettes, steakettes, meatballs, sausage meat and ground meat, with or without breading or batter	100 g raw 60 g cooked
Cured meat products, such as cured ham, dry cured ham, back bacon, cured pork back, corned beef, pastrami, country ham, cured pork shoulder picnic, cured poultry ham products, smoked meat or pickled meat	85 g raw 55 g cooked
Canned meat and poultry	55 g
Meat and poultry with sauce, such as meat in barbecue sauce or turkey with gravy, but excluding combination dishes	140 g

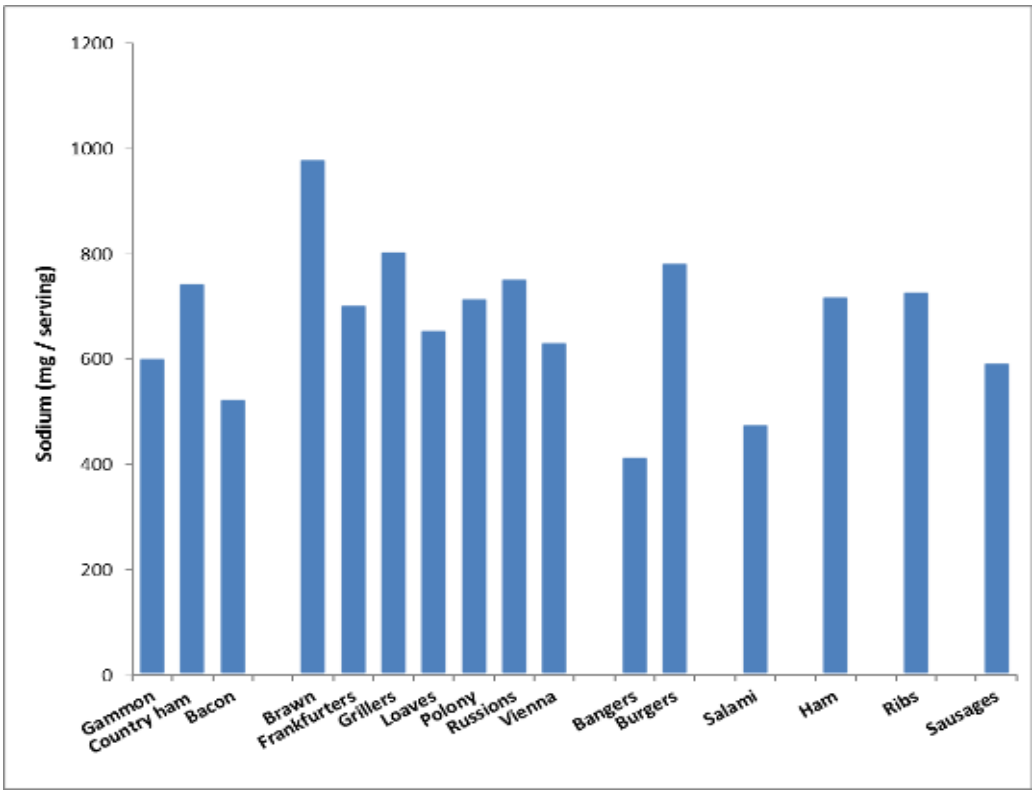

Figure 2: Sodium content (mg) per serving size of different uncooked processed pork meat products

When sodium content was converted from 100g to serving size, different products were at the top of the list (Figure 2). A serving size of brawn (125g uncooked) will contribute on average 983mg sodium to total sodium intake (~10% of recommended daily intake), while grillers and burger patties will contribute on average 800mg sodium (~9% of recommended daily intake). Pork bangers will contribute the lowest amount of sodium (~400mg) to the diet (~4% of recommended daily intake).

Food Intake Data

The frequency of consumption of different sodium containing foods is vastly unequal, resulting in some foods with high sodium content that are infrequently consumed, being only minor contributors of sodium to the diet, and vice versa. Therefore, the total sodium load, weighted by frequency of consumption, ought to be taken into account. Unfortunately there is a scarcity in food frequency data on processed meat products. Also, the available data might be outdated and did not differentiate between different processed meat products.

Data obtained from the large cross sectional prospective urban and rural epidemiology (PURE) study probably reported the most representative data produced on actual meat, fish and egg intake by black urban and rural South African adults in the past decade. The reported intake of meat products in the PURE Study population is low with only about 62-63% of subjects consuming between 10g and 21g per day. The average portion for adult men and women were reported to be 17.7g and 18.2g respectively (Van Heerden, et al., 2012). In the Birth to Twenty cohort it is reported that adolescents living in Soweto and Johannesburg ate one serving of a variety of processed meats daily due to their reliance on fast-food (Feeley, et al., 2009).

In a study investigating the food intake of South African Indians since 1999 in Kwa-Zulu Natal, it was found that among Indian women, the most frequently eaten processed meats appear to be polony (57.6%), grilled mutton sausage (92.8%), crumbed or breaded fried chicken patties (54%) and commercial curried mutton pies (30.2%). Biltong and bacon are not eaten frequently. The reported portion sizes are relatively small varying from about 9 to 29g per day in those subjects who eat processed meat products (Van Heerden, et al., 2012).

The abovementioned studies report an average portion size of 19g (between 9 and 29g). Polony has an average sodium content of 956mg/100g. This translates into a sodium contribution of < 2% to the total recommended sodium intake (5g).

Conclusion

Wide variations were seen in sodium content among different brands of the same product. This might be due to analytical variation related to method differences used by the different manufacturers and laboratories. This variation in sodium levels within products suggests that sodium levels can be reduced without compromising taste and shelf life.

The size of “one serving” of different food products of the same type vary and the serving size declared on the products may not reflect the actual amount most consumers would usually consume on one occasion. Some consumers may find the information provided confusing or misleading. Therefore, guidelines on serving size would be useful to assist the trade in preparing nutrition labels, as well as to facilitate consumers to better understand and utilise the information provided.

The availability of national intake data of processed meat products, and specifically processed pork products is very limiting. Reported portion sizes are smaller than indicated serving sizes. Therefore, the contribution of processed meat to sodium intake can be predicted to be lesser than expected. To validate this finding more and up to date food intake data (frequency and amount) with specific emphasis on processed meat products is necessary.

Acknowledgement

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