Changes in the sodium levels in savoury snacks 2013-2019

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food policy
WHO Collaborating Centre on Population Salt Reduction

The George Institute for Global Health

VicHealth™

This Report was prepared for the VicHealth Salt Reduction Partnership, by Clare Farrand and Emalie Rosewarne, World Health Organization Collaborating Centre on Population Salt Reduction, The George Institute for Global Health.

Tips for consumers

- Eat fresh foods like fruits and vegetables wherever possible.
- Try unsalted nuts and seeds, as a satisfying and healthy snack, or make your own spiced and roasted versions at home.
- Serving sizes vary greatly – be aware you could be consuming more salt than you realise.
- When you buy processed and packaged foods, read the label and opt for the lower sodium (salt) option. Products with less than 400mg sodium per 100g are OK.
- There is also an app to help find healthier options. Download the FoodSwitch app, which allows you to scan the barcode of a product to reveal instant, easy to understand nutrition information about the product, and suggest healthier alternatives. FoodSwitch makes it easier than ever before to navigate supermarket shelves. There's even a SaltSwitch filter to focus on products lower in salt. App available at: www.foodswitch.com.au

Introduction

Sodium is a chemical element required by the body for many physiological functions, however excess dietary sodium intake increases blood pressure and consequently increases the risk of cardiovascular diseases (CVDs).[1] In Australia, CVDs are the leading cause of death, responsible for 32% of all deaths.(2) Further, about one-third of the adult population has been diagnosed with high blood pressure.[2,3] Salt, or sodium chloride, is the main source of dietary sodium.[4] Correspondingly, salt reduction is an effective way to lower blood pressure and prevent CVDs, as well as other diseases associated with high salt intakes such as chronic kidney disease, obesity, gastric cancer and liver diseases.[5,6,7,8]

In 2006, the World Health Organization (WHO) set a global target of reducing population salt intake to below 5g/day[9] and in 2013, WHO Member States, including Australia, adopted a global target to reduce mean population salt intake by 30% by 2025.[4,10] Yet, Australians are consuming on average almost double the recommended amount, with 9.6g of salt per day being the best estimate of salt intake (men: 10.1g/day, women: 7.3g/day).[11]

Salt reduction efforts in Australia began with the creation of the Food and Health Dialogue (FHD) in 2009, identifying priority food categories for product reformulation and setting voluntary targets to reduce sodium content in the food supply.[12] This has recently been succeeded by the Healthy Food Partnership (HFP) in late 2015, which has drafted sodium targets for 30 food categories.[13] In response to the high sodium intake in Victorians, The Victorian Health Promotion Foundation (VicHealth) Salt Reduction Partnership group was established in 2014 with the aim of reducing the average salt intake for Victorians by 1 gram by June 2020.[14]

Savoury snacks, which includes potato snacks, corn snacks, extruded or reformed snacks, and other salty snacks,[15] have been identified as a priority food category for reformulation, with both the FHD and now the HFP proposing voluntary sodium targets for this category.[12,13] These products are estimated to contribute approximately 2% of daily sodium intake to the Australian diet (3.6% for ages 2–18; 1.4% for 19+).[15] The Australian Health Survey revealed 15% of the population consumed savoury snacks on the day of the survey, approximately 30% of children and adolescents (2-18) and 10% of adults.[15] Yet, Roy Morgan Research revealed more than half (58%) of Australians consume potato chips (41%) or corn chips (17%) at least once per week.[16]

The consumption of snack foods continues to increase, however the way we snack has changed, with shoppers now looking for 'healthier' snack options. Snack foods marketed as a 'healthy' option have seen twice the average annualised growth rate of traditional snacks (3.0% vs 1.4%) from 2010 to 2015.[17] Increasing demand for 'healthier' options, such as popcorn and legume-based snacks, has also driven increases in the variety of products and flavours across the food category.[18,19] However, while these snacks are being marketed as a 'healthier' snack alternative, there is concern that these products are still packed with salt.

This study aimed to assess the mean and range of sodium levels in savoury snacks in 2019, to determine the changes in mean sodium levels between 2013 and 2019, and to calculate the percentage of products meeting the draft HFP targets and the previous FHD targets.

Methods

Data collection

Sodium information and relevant product information were extracted from the Australian FoodSwitch database for 2013, 2015, 2017 and 2019. Data are collected by taking pictures of product information for foods in Australia's four major supermarkets: Coles, Woolworths, IGA and Aldi. Data collected includes the barcode, front of pack, nutrition information panel (NIP), ingredients list, health claims and manufacturer information.

Data categorisation and product exclusion

Within the savoury snacks category, products were categorised as: corn chips, extruded snacks, legume-based snacks, popcorn, potato crisps, pretzels, salt and vinegar snacks, vege-based snacks and wholegrain snacks.

The HFP draft sodium targets have five categories for savoury snacks: Corn snacks (360mg/100g; including corn chips and popcorn), potato snacks (500mg/100g), extruded snacks (720mg/100g; e.g. Twisties, Cheezels), salt and vinegar snacks (810mg/100g), and vegetable, grain and other snacks (450mg/100g; including legume snacks).

The previous FHD targets cover four savoury snack categories: Potato chips (800mg/100g), extruded snacks (1250mg/100g), salt and vinegar snacks (1100mg/100g) and cereal-based snacks (700mg/100g, including corn and wholegrain snacks).

Products were excluded if there was no sodium in mg/100g value or displayed erroneous data errors.

Data Analysis

The total number of products and products per category were recorded. The mean (SD) sodium content per 100g food, and range were determined, overall and for all product categories. Trends in mean sodium levels between 2013, 2015, 2017 and 2019, were determined overall and for each category.

Statistical analyses were conducted in Stata 15. Alpha was set at a 0.05 significance level. One-way ANOVA's (post-hoc Scheffe) were performed to compare mean sodium content across the years.

Key findings

Summary of surveyed products

- A total of 1505 products were analysed
  - o 311 products in 2013, 410 in 2015, 333 in 2017 and 451 in 2019
  - o There has been a 45% increase in the number of snack food products from 2013 to 2019.
  - o Categories with the highest product growth were legume-based snacks (+183%) and popcorn (+67%).
- There was a 9% decrease in the sodium content of savoury snacks between 2013 and 2019
  - o There was a 14% decrease across products that had a Food and Health Dialogue (FHD) target while no change was seen in products without a FHD target
  - o For extruded snacks, there was a 23% decrease in the sodium content
  - o For vege-based snacks there was a 68% increase in the sodium content

Key findings from 2019

- The average sodium content per 100g in 2019 was 601mg [1.5g salt], and the range from 3mg to 3100mg [0-7.8g salt]
- The category with the highest average sodium content per 100g was pretzels (1187mg sodium [3g salt]) followed by vege-based snacks (858mg sodium [2.1g salt])
- Corn chips and popcorn were the categories with the lowest average salt content per 100g (corn chips: 419mg sodium [1g salt], popcorn: 448mg sodium [1.1g salt])
- The average sodium content per serve was 172mg [0.4g salt], 9% of an adult's maximum daily intake, and the highest salt content per serve was 1062mg, 53% of an adult's maximum daily intake
- The average serving size was 29g and ranged from 5g to 100g

Comparison against sodium targets (please refer to tables 2A and 2B)

- 42% of savoury snacks met the draft HFP targets overall in 2019
  - o By category, 69% of salt and vinegar snacks, 44% of extruded snacks, 41% of vegetable and grain snacks, 39% of potato snacks and 37% of corn snacks met the draft targets

Selected savoury snack categories

Legume-based snacks

- The average sodium content of legume-based snacks was 594mg/100g [1.5g salt] and 175mg/serve [0.4g salt]
- Highest sodium content was found in Simply 7 Lentil Chips Jalapeno, with 1355mg/100g [3.4g salt]
  - o Per serving: 379mg sodium/28g serve [0.9g salt], 19% maximum daily intake
- Lowest sodium content was found in Macro Air Puffed Fava Beans Pizza Flavour and Coles Gluten Free Pizza Flavoured Faba Bean Packs, with 196mg/100g [0.5g salt]
  - o Per serving: 39mg sodium/20g serve [0.1g salt], 2% maximum daily intake
- Per serving, the highest sodium content was found for Pangkarra Chickpea Puffs Lemon, Lime and Chilli with 1062mg/90g serve [2.7g salt], 53% maximum daily intake (1180mg/100g [3g salt])
- Per serving, the lowest sodium content was found for The

Happy Snack Company Kids Roasted Fav-Va Beans Lightly Salted with 38mg/15g serve [0.1g salt], 2% maximum daily intake (250mg/100g [0.6g salt])

Vege-based snacks

- The average sodium content of vege-based snacks was 858mg/100g [2.1g salt] and 137mg/serve [0.3g salt]
- Highest sodium content was found in DJ&A Kale Chips Slow Roasted & Lightly Salted, with 3100mg/100g [7.8g salt]
  - o Per serving: 155mg sodium/5g serve [0.4g salt], 8% maximum daily intake
- Lowest sodium content was found in Thomas Chipman Certified Organic Lightly Salted Vegetable Chips, with 120mg/100g [0.3g salt], this was also the lowest sodium product per serve
  - o Per serving: 30mg sodium/20g serve [0.1g salt], 2% maximum daily intake
- Per serving, the highest sodium content was found for Blackstone Gourmet Snack Co. Sweet Potato Chips Sea Salt Deli Style with 301mg/50g serve [0.8g salt], 15% maximum daily intake (603mg/100g [1.5g salt])

Strengths and limitations

This report benefits from the highly standardised approach to the collection, processing and evaluation of the data and the large range of products captured. The preparation of the report is independent of interested parties, in particular the food industry, which is an important additional strength.

The report must, however, be interpreted considering some limitations. While the data are representative of what was on the shelves of the sampled stores during the survey period, they do not represent every product available in every store throughout the year. The analyses rely upon the data reported on pack by manufacturers with imputation of some metrics, such as serving size and sodium per serve. In addition, the data illustrates what is available for sale in stores but not what is purchased or consumed.

Conclusions

The number of savoury snack products on supermarket shelves continues to increase, and legume-based snacks are a notable growth area. On average, legume and vege-based snacks contain higher levels of sodium than traditional potato chips.

There has been a decrease in the sodium content of savoury snacks overall, however on further analysis, this decrease has only occurred in categories which had an FHD target. There has been no change in the sodium content overall for categories without an FHD target such as legume-based snacks, and there has been an increase in sodium content of vege-based snacks.

The variability of sodium levels within categories and across different brands of products highlights the potential for reformulation by the food industry.

Recommendations

For Government

- Finalise and implement draft salt reduction targets which cover 95% of currently available savoury snacks
- Create a regulatory monitoring scheme to assess industry compliance with established salt targets.
- Implement consumer awareness campaigns to inform Australians about the health benefits of reducing salt intake.

For Industry

- Gradually reformulate high salt products to lowest levels of salt possible and when developing new products consider the lowest possible amount of salt.

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Table 1A – Mean sodium levels and ranges by category for savoury snacks

	2013			2015			2017			2019			2013 vs 2019	
	n	Mean (SD)	Range	n	Mean (SD)	Range	n	Mean (SD)	Range	n	Mean (SD)	Range	% change	p-value*
Snackfoods	311	663 (369)	7 - 2100	410	605 (297)	7 - 1950	333	594 (281)	7 - 1900	451	601 (340)	3 - 3100	-9%	0.04
Corn chips	51	441 (224)	7 - 907	56	423 (216)	7 - 897	55	413 (205)	7 - 888	76	419 (209)	3 - 1134	-5%	0.91
Extruded snacks	51	982 (364)	250 - 1690	64	844 (276)	350 - 1690	53	753 (266)	72 - 1690	59	761 (317)	20 - 1500	-23%	<0.001
Legume-based snacks	24	515 (203)	220 - 920	35	557 (277)	163 - 1250	29	518 (309)	76 - 1220	68	594 (322)	196 - 1355	15%	0.56
Popcorn	33	416 (175)	122 - 784	48	433 (285)	25 - 1950	33	506 (191)	110 - 975	55	448 (149)	110 - 733	8%	0.31
Potato crisps	87	577 (190)	14 - 1170	130	555 (169)	14 - 1357	103	557 (143)	20 - 840	122	532 (137)	20 - 840	-8%	0.24
Pretzels	18	1305 (440)	425 - 2100	17	1071 (291)	559 - 1800	12	1217 (350)	559 - 1900	20	1187 (379)	559 - 1840	-9%	0.33
Salt and vinegar snacks	21	994 (320)	495 - 1884	26	905 (257)	460 - 1750	21	851 (240)	583 - 1750	22	838 (286)	300 - 1750	-16%	0.25
Vege-based snacks	15	511 (194)	280 - 1070	22	494 (258)	150 - 1070	18	541 (315)	19 - 1070	21	858 (774)	120 - 3100	68%	0.05
Wholegrain chips	11	485 (306)	336 - 1400	12	442 (141)	336 - 750	9	432 (87)	336 - 596	8	506 (255)	380 - 1124	4%	0.87

*** p-value is the result of one-way ANOVA with a Scheffe post-hoc test**

Table 1B – Mean sodium levels and ranges categorised by Food and Health Dialogue (FHD) target

	2013			2015			2017			2019			2013 vs 2019	
	n	Mean (SD)	Range	n	% change	Range	n	Mean (SD)	Range	n	Mean (SD)	Range	% change	p-value
FHD target	254	640 (339)	7 - 1884	336	594 (282)	7 - 1950	274	578 (238)	7 - 1750	342	552 (249)	3 - 1750	-14%	0.001
No FHD target	57	763 (472)	220 - 2100	74	656 (355)	150 - 1800	59	667 (421)	19 - 1900	109	753 (504)	120 - 3100	-1%	0.73

Table 2A – Comparison of the sodium content in savoury snacks with Healthy Food Partnership (HFP) draft targets

		Products meeting HFP Targets	
Category	**HFP SODIUM TARGET (mg/100g)**	**NUMBER**	**PROPORTION**
Potato snacks	500	48	39%
Extruded snacks	720	26	44%
Salt and vinegar snacks	810	18	69%
Corn snacks	360	49	37%
Vegetable and grain snacks	450	38	41%
Total		179	42%

Table 2B – Comparison of the sodium content in savoury snacks with previous Food and Health Dialogue (FHD) targets

		Products meeting FHD Targets	
Category	**FHD SODIUM TARGET (mg/100g)**	**NUMBER**	**PROPORTION**
Potato chips	800	118	97%
Extruded snacks	1250	56	95%
Salt and vinegar snacks	1100	18	82%
Cereal based snacks	700	132	95%
Total		324	95%

Table 3 – Mean sodium levels and ranges per serve, and mean serving size and range in 2019

		sodium per serve		serving size	
	Number of products	**Mean (mg/100g, SD)**	**Range (mg/100g)**	**Mean (mg/100g, SD)**	**Range (mg/100g)**
Snackfoods	448	172 (126)	1 - 1062	29 (12)	5 - 100
Corn chips	75	135 (71)	1 - 331	32 (10)	15 - 50
Extruded snacks	59	205 (149)	2 - 1050	25 (10)	6 - 70
Legume-based snacks	67	175 (171)	38 - 1062	29 (16)	15 - 90
Popcorn	55	103 (52)	22 - 303	23 (7)	11 - 50
Potato crisps	122	168 (72)	5 - 411	32 (12)	19 - 100
Pretzels	19	374 (220)	138 - 969	30 (15)	18 - 85
Salt and vinegar snacks	22	256 (116)	90 - 524	31 (10)	19 - 50
Vege-based snacks	21	137 (67)	30 - 302	20 (9)	5 - 50
Wholegrain chips	8	175 (92)	85 - 337	35 (11)	22 - 50

References

1 Graudal NA, Hubeck-Graudal T, Jürgens G. Effects of Low-Sodium Diet vs. High-Sodium Diet on Blood Pressure, Renin, Aldosterone, Catecholamines, Cholesterol, and Triglyceride (Cochrane Review). American Journal of Hypertension. 2012;25(1):1-15.

2 Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization Seattle, WA: IHME, University of Washington; 2016

3 Australian Bureau of Statistics. Australian Health Survey: Nutrition First Results Foods and Nutrients, 2011 12. Canberra, Australia: The Australian Bureau of Statistics. 2014.

4 World Health Organization. Global status report on noncommunicable diseases 2014. Geneva, Switzerland: World Health Organization; 2014.

5 He FJ, MacGregor GA. A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. Journal of Human Hypertension. 2009;23(6):363-84

6 Ma Y, He FJ, MacGregor GA. High Salt Intake: Independent Risk Factor for Obesity? Hypertension. 2015;66(4):843-9.

7 Hope SF, Webster J, Trieu K, Pillay A, Ieremia M, Bell C, et al. A systematic review of economic evaluations of population-based sodium reduction interventions. PLoS One. 2017;12(3).

8 Schorling E, Niebuhr D, Kroke A. Cost-effectiveness of salt reduction to prevent hypertension and CVD: a systematic review. Public Health Nutrition. 2017;20(11):1993-2003.

9 World Health Organization. Prevention of cardiovascular disease: guidelines for assessment and management of cardiovascular risk. Geneva: World Health Organization; 2007.

10 Webster J, Trieu K, Dunford E, Nowson C, Jolly K-A, Greenland R, et al. Salt reduction in Australia: From advocacy to action2015. 207-18 p.

11 Land MA, Neal BC, Johnson C, Nowson CA, Margerison C, Petersen KS. Salt consumption by Australian adults: a systematic review and meta-analysis. Med J Aust. 2018;208(2):75-81.

12 Commonwealth of Australia. Food and Health Dialogue Canberra, Australia: Commonwealth of Australia; 2015 [Available from: http://www.health.gov.au/internet/main/publishing.nsf/Content/fhd.

13 Commonwealth of Australia. Healthy Food Partnership Canberra, Australia: Commonwealth of Australia; 2016 [Available from: http://www.health.gov.au/internet/main/publishing.nsf/content/healthy-food-partnership.

14 Victorian Health Promotion Foundation. Salt reduction in Victoria. Victoria, Australia: Victorian Health Promotion Foundation; 2017 [Available from: https://www.vichealth.vic.gov.au/programs-and-projects/salt-reduction.

15 Australian Bureau of Statistics. 4364.0.55.007 - Australian Health Survey: Nutrition First Results - Food and Nutrients, 2011-12. In: Statistics ABo, editor. Canberra, Ausralia: Commonwealth of Australia; 2014.

16 Morgan R. Let it rip, Potato Chip! Australia's favourite snacks Melbourne, Australia: Roy Morgan; 2014 [Available from: http://www.roymorgan.com/findings/5938-australias-favourite-snacks-201411202225.

17 Australian Food News. Snack foods soar in Australia with healthier marketing focus Melbourne, Australia: Australian Food News,; 2015 [Available from: https://www.ausfoodnews.com.au/2015/08/03/snack-foods-soar-in-australia-with-healthier-marketing-focus.html.

18 Euromonitor International. Savoury Snacks in Australia London, UK: Euromonitor; 2019 [Available from: https://www.euromonitor.com/savoury-snacks-in-australia/report.

19 The Associated Press. Global Legumes Market 2019-2023| High Consumption of Legume Based Snacking Items to Boost Growth| Technavio New York, USA: The Associated Press; 2019 [Available from: https://apnews.com/2020283fb7854312bdb469faa3ac1aff.