



Changes in salt levels in ready meals, Australia (2010-2017)

September 2017



The George Institute
for Global Health



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Introduction

Cardiovascular disease is the leading cause of non-communicable disease (NCD) deaths worldwide.¹ Excess dietary salt intake increases blood pressure, and the risk of stroke and cardiovascular disease.² Globally, it has been estimated that more than 1.65 million cardiovascular deaths per year are attributed to excess dietary salt intake.³

Reducing salt intake is one of the most cost-effective public health interventions to reduce the global burden of non-communicable disease (NCDs); by lowering blood pressure, and thereby reducing the risk of stroke and heart disease deaths.⁴ Many countries are working towards achieving the global target of a 30% relative reduction in mean population salt intake towards the World Health Organisation (WHO) <5g target.⁵

Average salt intake in Australia is around 9g salt per day,⁶ almost DOUBLE the WHO <5g recommendation. The Australian Federal Government has signed up to the global target to reduce population salt intake by 30% by 2025. In order to ensure we are on the right track to achieve this, The Victorian Health Promotion Foundation has established a Salt Reduction Partnership Group, including The George Institute for Global Health, The Heart Foundation, Deakin University, and the Victorian Department of Health, to review the evidence, consult with stakeholders and develop an action plan for salt reduction in Victoria.⁷ The World Health Organization Collaborating Centre on Population Salt Reduction at the George Institute for Global Health in Sydney has a remit to support countries to achieve this target including developing programs of work to reduce salt levels in food.

It is estimated that approximately 75% of dietary salt is

Tips for consumers

- Limit processed foods and meals where possible and prepare foods at home using lots of fresh ingredients and vegetables.
- Download the FoodSwitch app to scan product barcodes to be directed to a product with a lower sodium content. Available to download from <http://www.foodswitch.com.au>
- Read the label and choose the lower sodium option.
- Use the Australian Guide to Healthy Eating as a guide to make healthier choices.

from processed foods, including ready meals.⁸ Previous studies have shown that these products have high levels of sodium,⁹ and this, coupled with the increasing number and variety of ready meals becoming available in Australia, makes ready meals a key product category to assess to identify opportunities for salt reduction.

In 2009, The Australian Food and Health Dialogue (FHD) (since superseded by the new government's Healthy Food Partnership) set voluntary sodium reduction targets for 9 food categories, including bread, ready to eat breakfast cereals, simmer sauces, processed meats, soups, savory pies, potato/corn extruded snacks and cheese. There are currently no Australian targets for ready meals.¹⁰

The aim of this study was to analyse the changes in sodium contents in ready meals sold in Australia in 2010, 2013, 2015 and 2017, and compare sodium contents against existing targets, namely those set by The Department of Health in the United Kingdom (UK).¹¹ This was with the view to understanding the current sodium levels in ready meals in Australia and inform direction for future reformulation efforts.

Methods:

Data Collection

Ready meals product data collected in 2010, 2013 and 2015 was extracted from the George Institute's packaged food composition database (FCD) for Australia. Ready meal data for 2017 was collected using the protocol for data collection for the food composition database.¹² Data extracted for ready meals included: manufacturer name, brand name, product name, pack size, serving size, and sodium mg/100g.

Product Inclusion and Exclusion

Ready meals were defined as "pre-prepared, complete meals that required no extra ingredients and minimal preparation, other than heating".⁹

Products excluded were pre-prepared salads (except if they contained rice, pasta or noodles) and sandwiches, side dishes, marinated meats, pizza, processed meat / fish e.g. pies (unless sold as a meal), sausage rolls, burger patties, sausages/kebabs, dumplings and similar products (e.g. gyoza, dim sims, spring rolls, pork buns), soups, meal kits and quiche. Products with ambiguous sodium levels were also excluded.

Categorisation:

Ready meals were categorised into 3 major categories; ambient*, chilled and frozen and then further categorised into minor categories including Asian-style, Hotpots, Lasagne, Meat and vegetables, Mexican, Noodle-based, Pasta-based, Risotto and 'Other'.

Data analysis

Number of products, mean sodium (mg/100g) and ranges of sodium (mg/100g) were determined for each category and sub-category for each year (2010, 2013, 2015 and 2017). Mean sodium values were compared against the 2017 UK salt targets. The proportion of products meeting UK salt targets was also derived for each year. In addition, one-way ANOVA was used to determine if there were statistically significant differences in the mean sodium content across the years, and a post-hoc analysis using Scheffe's method was carried out to determine which specific years differed (i.e. 2010 vs 2013, 2010 vs 2015, 2010 vs 2017 etc). Logistic regression was used to determine if there were differences in the proportion of products meeting the targets across the years. Statistical analysis was done using Stata IC version 13.0 for Windows (StataCorp LP, Texas). A p-value of <0.05 was considered as statistically significant.

Key Findings:

- 1478 products were analysed from 2010-2017.
- Overall there has been no reduction in the average sodium content of ready meals from 2010-2017.
- In 2017, the average sodium content of ready meals was 282mg/100g.

- In 2017 the average serving size of a ready meal is 350g. Therefore, the average sodium per meal is around 1000mg sodium per serve. This is 2.5grams of salt - half the WHO daily recommended maximum in one meal.
- Ambient ready meals had the highest average sodium content in all years (345mg, 349mg, 422mg and 334mg/100g respectively).
- Chilled ready meals had the lowest average sodium content in 2010 (232mg/100g), however average sodium content of chilled ready meals has increased by 31% to 303mg/100g in 2015. There was no significant change from 2015-2017.
- Only 42% of products in 2017 met the 2017 UK average sodium target (250mg/100g).
- There is a wide range in the sodium contents of products (37-828mg/100g).
 - The lowest sodium product, a pasta-based chilled meal – 'My Pasta Box Classic Tomato and Basil Penne' – contained 37mg sodium per 100g. The highest sodium ready meal, a noodle based chilled meal – 'Brubecks Organic Soba Noodles salad' - contained over 22 times more sodium (828mg sodium /100g), and more than 80% of the WHO recommended daily maximum in a single serving (1656mg/200g suggested serving).
- Serving sizes of ready meals also vary significantly which influences how much sodium is eaten in a single meal
 - For example; CP Authentic Asia Prawn Wonton Tom Yum Soup with Ramen contains 595mg/100g sodium and has a serving size of 322g. So a serve could see you eat almost an ENTIRE day's worth of sodium (1915mg sodium, 4.8g salt per serve) and almost 10 times more sodium compared to a serving of the lowest frozen meal sodium option – 'The Sultans Kitchen Butter Chicken' containing 84mg/100g, 210mg sodium per 250g serving.
- The number of ready meals collected in stores increased by 129% from 208 products in 2010 to 473 products in 2017.
 - The biggest increase in the number of products collected was for chilled ready meals; there were more than 4 times as many products collected in 2017 compared to 2010 (157 compared to 29 products).

Conclusion:

There is a wide range in sodium content of ready meals which indicates that manufacturers can make these products with less sodium. There has been no change in the sodium content of ready meals from 2010-2017. The huge range in sodium content amongst similar products highlights the need for targets to drive reformulation to reduce salt in these products by food manufacturers.

Recommendations:

- The high levels, and wide ranges of sodium in ready meals highlights the need for sodium targets for manufacturers to work towards to reduce the amount of sodium in these products.
- Regular monitoring of food supply is required to ensure the food industry meets the targets for sodium reduction.

Limitations

The products captured in the packaged food composition database do not necessarily represent a complete coverage of the product supply within Australia, but rather those captured at specific time points during surveys, and limited to major food retailers.

Notes on data:

Data was analysed using sodium per 100g. To convert to salt (g) multiply sodium (mg) by 2.5 and divide by 1000. For example: 2000mg sodium = 5g salt.

About The George Institute's Food Policy Division

The George Institute's Food Policy group works in Australia and internationally to reduce rates of death and disease caused by diets high in salt, saturated fat and sugar or excess energy, by undertaking research and advocating for a healthier food environment. The George Institute Food Policy group's main focuses are food reformulation, monitoring changes in the food supply, and developing and testing innovative approaches to encourage consumers towards better food choices.

The George Institute for Global Health

The George Institute for Global Health is improving the lives of millions of people worldwide through innovative health research. Working across a broad health landscape, the Institute conducts clinical, population and health system research aimed at changing health practice and policy worldwide. The Institute has a global network of medical and health experts working together to address the leading causes of death and disability worldwide. Established in Australia and affiliated with UNSW Sydney, the Institute today also has offices in China, India and the United Kingdom, and is also affiliated with Peking University Health Science Centre, the University of Hyderabad and the University of Oxford.

The George Institute prioritises clinical and population health research that produces outcomes that are easily translated into practice, and effect real change within a short period of time to health policy and practice. The Institute has been ranked among the top 10 global institutes for impact for the last several years, and its research has resulted in changes to medical guidelines and ways of thinking about some of the most common medical treatments around the world. Examples include developing a new treatment for stroke, showing that blood pressure lowering reduces the risk of

cardiovascular disease in people with diabetes, and providing safer fluid options for patients in intensive care. Developing better methods for delivering health care are a priority for the Institute. Follow us on Facebook at and on Twitter @georgeinstitute

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Table 1: READY MEALS: Mean, median, range of sodium in ready meals from 2010 to 2017

FOOD CATEGORIES	2010 SODIUM LEVELS (mg/100g)				2013 SODIUM LEVELS (mg/100g)				2015 SODIUM LEVELS (mg/100g)				2017 SODIUM LEVELS (mg/100g)			
	No.	Mean	Median	Range	No.	Mean	Median	Range	No.	Mean	Median	Range	No.	Mean	Median	Range
READY MEALS	208	281	275	42-562	436	302	285	84-931	361	318	280	1-5900	473	282	265	37-828
Ambient ready meals	48	345	355	140-562	108	349	315	115-811	96	422	319	1-5900	111	334	311	170-783
Asian-style	12	284	258	146-445	12	299	292	175-460	29	316	306	1-662	19	326	331	170-464
Hotpots	14	347	345	206-535	38	313	295	220-535	14	317	291	248-480	34	306	292	220-535
Meat and vegetables	12	394	393	203-562	10	370	345	240-562	9	373	338	282-562	6	452	447	325-638
Mexican	0	NA	NA	NA	0	NA	NA	NA	0	NA	NA	NA	1	335	335	NA
Noodle-based	0	NA	NA	NA	11	520	500	350-811	14	797	425	169-5900	13	386	431	179-630
Pasta-based	9	381	390	210-490	17	318	295	115-496	16	452	324	212-900	13	314	286	211-783
Risotto	0	NA	NA	NA	0	NA	NA	NA	4	209	201	191-242	0	NA	NA	NA
Other	1	140	140	NA	20	369	351	189-662	10	436	416	200-676	25	332	324	189-590
Chilled ready meals	29	232	233	42-450	121	315	310	84-679	106	303	294	99-864	157	284	268	37-828
Asian-style	10	196	184	42-326	40	374	353	112-628	23	338	333	110-499	54	308	295	65-780
Hotpots	2	180	180	120-239	2	248	248	175-320	2	220	220	175-264	2	285	285	229-341
Lasagne	3	300	320	180-400	20	290	313	135-392	18	264	270	118-422	29	274	270	141-499
Meat and vegetables	4	141	140	109-176	14	210	202	84-459	10	284	286	116-469	16	270	252	102-440
Mexican	0	NA	NA	NA	5	391	398	211-525	0	NA	NA	NA	5	233	189	155-353
Noodle-based	0	NA	NA	NA	1	679	679	NA	2	435	435	309-561	6	502	398	320-828
Pasta-based	8	310	290	244-450	29	285	288	144-410	17	295	280	135-491	41	247	245	37-491
Risotto	2	227	227	197-256	7	310	315	239-350	8	260	283	104-349	2	229	229	153-305
Other	0	NA	NA	NA	3	282	290	212-343	26	321	278	99-864	2	207	207	191-222
Frozen ready meals	131	268	270	129-435	207	269	260	94-931	159	265	251	84-746	205	253	250	84-595
Asian-style	24	258	260	150-420	59	250	245	94-483	42	238	239	84-424	44	223	222	84-350
Hotpots	7	270	260	240-330	7	256	260	160-370	7	194	160	130-270	5	241	234	202-285
Lasagne	17	274	266	175-371	25	268	266	160-415	16	263	259	129-371	25	242	225	129-363
Meat and vegetables	30	280	281	170-435	38	268	275	120-425	22	293	300	170-400	42	273	269	90-408
Mexican	1	230	230	NA	1	210	210	NA	4	249	243	163-346	10	257	230	163-380
Noodle-based	4	318	305	260-400	10	347	273	160-760	7	262	265	214-333	13	327	295	140-595
Pasta-based	41	255	263	129-333	52	262	265	130-478	42	272	265	150-525	47	243	251	151-311
Risotto	7	289	295	230-340	12	237	240	175-295	5	214	220	94-280	8	245	273	94-306
Other	0	NA	NA	NA	3	690	714	424-931	14	348	239	160-746	11	282	234	130-504

Table 2: Ready meal categories with UK targets (average): proportion of products meeting the targets from 2010 to 2017

FOOD CATEGORIES	FHD Target (mg/100g)	2010			2013			2015			2017		
		No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target
Ambient ready meals	250	48	11	23	108	13	12	96	18	19	111	27	24
Chilled ready meals	250	29	17	59	121	36	30	106	31	30	157	64	41
Frozen ready meals	250	131	44	34	207	99	48	159	79	50	205	108	53
TOTAL	NA	208	72	35	436	148	34	361	128	35	473	199	42

Table 3: Ready meal categories with UK targets (maximum): proportion of products meeting the targets from 2010 to 2017

FOOD CATEGORIES	UK Target (mg/100g)	2010			2013			2015			2017		
		No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target	No. of products	No. meeting the target	% meeting the target
Ambient ready meals	380	48	29	60	108	76	70	96	63	66	111	83	75
Chilled ready meals	380	29	27	93	121	95	79	106	86	81	157	135	86
Frozen ready meals	380	131	128	98	207	193	93	159	148	93	205	192	94
TOTAL	NA	208/	184	88	436	364	83	361	297	82	473	410	87