Review

The development of a national salt reduction strategy for Australia

Jacqui Webster MA, Elizabeth Dunford MPH, Rachel Huxley DPhil, Nicole Li MIPH, Caryl A Nowson PhD, Bruce Neal FAHA

The George Institute for International Health, Sydney, Australia

Excess dietary salt is a well established cause of high blood pressure and vascular disease. National and international bodies recommend a significant reduction in population salt intakes on the basis of strong evidence for health gains that population salt reduction strategies could achieve. The Australian Division of World Action on Salt and Health (AWASH) coordinates the *Drop the Salt!* campaign in Australia. This aims to reduce the average amount of salt consumed by Australians to six grams per day over five years through three main implementation strategies targeting the food industry, the media and government. This strategy has the potential to achieve a rapid and significant reduction in dietary salt consumption in Australia. With industry and government engagement, this promises to be a highly effective, low cost option for preventing chronic disease.

Key Words: salt, public health, food supply, dietary, cardiovascular disease

INTRODUCTION

Cardiovascular diseases (predominantly heart attack and stroke) are the leading causes of death in Australia and in 2004 accounted for some 48,000 deaths nationwide.[1] These diseases are also a major cause of disability with an estimated 1.4 million Australians (6.9% of the population) living with a disability related to cardiovascular conditions. In terms of direct health care expenditure, cardiovascular disease costs $5.5 billion, over 10% of Australia's total allocated health system expenditure,[2] making it the most expensive disease in the country.

There is overwhelming evidence of the adverse effects of elevated blood pressure on the risk of cardiovascular disease[3,4] and the potential to reverse these effects through lowering blood pressure.[5,6] Recent reports from the World Health Organisation (WHO) have identified high blood pressure as the third leading cause of disease burden worldwide, ahead of both smoking and cholesterol and behind only unsafe sex (the HIV/AIDS epidemic) and under-nutrition (that mostly causes death in childhood).[7] It is estimated that half of all disease caused by raised blood pressure actually occurs amongst individuals with blood pressure levels below 140/90 mmHg.[8] Such individuals are not typically considered to be at risk of diseases caused by blood pressure and are usually denied the benefits of blood pressure lowering interventions.

SALT AND ILL HEALTH

It is widely accepted that excess dietary salt causes blood pressure to rise in both the short and long term[9-11] and that salt is a major determinant of population blood pressure levels.[12] It is also clear that salt reduction can substantially reduce blood pressure levels[13-17] and avert serious vascular complications.[18] These conclusions are accepted by both the Australian government[19] and leading health organisations,[20] with targets for optimal levels of salt consumption set for both the general population and at-risk groups.[21] There are also National Health and Medical Research Council (NHMRC) recommendations for the food industry to reduce salt in foods.[22] The National Heart Foundation of Australia (NHF) has implemented a Tick Program leading a number of companies to reduce the salt content of some products[23] but significant across the board reductions in the salt content of food have not been achieved.[24]

BENEFITS OF SALT REDUCTION PROGRAMS

The magnitude of the potential health gains achievable through population salt reduction is very large[12] but not widely recognised. Recent estimates suggest that the number of deaths averted by moderate reductions in population salt consumption would be at least as great as those achieved by plausible reductions in population smoking rates.[12] It has been estimated that reducing population salt intakes in Australia to below the current recommended maximum would avert tens of thousands of cardiovascular events in Australia by the year 2018 as a consequence of population-wide blood pressure reduction.[25] Comparably large estimates of health benefits have been made for the UK which experiences similar patterns of salt-related disease to those found in Australia.[26,27]

Corresponding Author: Dr Elizabeth Dunford, The George Institute for International Health, PO Box M201, Missenden Road, Sydney, NSW 2050, Australia
Tel: 02 8507 2529; Fax: 02 9993 4501
Email: edunford@george.org.au
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Population salt reduction strategies are also projected to be highly cost-effective.[12,28,29] The annual cost for a stand alone national salt reduction strategy for Australia has been estimated at less than A$15 million and could be considerably lower if done in conjunction with existing public health programs.[28] This compares with more than A$1 billion expended each year on the Australian clinical hypertension control program[1] that probably averts about the same disease burden as would be averted by a national salt reduction strategy. Accordingly, the cost per disability adjusted life year (DALY) averted by a national salt reduction program is only a fraction of that for a number of drug therapies recently approved for subsidy under the Pharmaceutical Benefits Scheme.[28]

EVIDENCE TO SUPPORT A SALT REDUCTION PROGRAM IN AUSTRALIA

The evidence base to support salt reduction is compelling[30-34] and in 2006 the WHO made a specific recommendation to its member states regarding the implementation of national salt reduction programs.[28] Currently, the most active national salt reduction program is in the UK,[35] although some other countries have commenced efforts to reduce population salt consumption[28] and others have previously achieved significant reductions in population salt intake and associated health gains.[36] There is a global organisation (World Action on Salt and Health[37]) established to facilitate salt reduction efforts worldwide and this group currently has 375 members from 80 countries. There is also substantial agreement about the key technical components of national salt reduction programs. For example, targets for personal daily salt consumption (5-6g/day[28]) are similar around the world, as are the proportionate estimates of dietary salt deriving from processed foods in developed countries (about 70-80%).[11,38] Likewise the main implementation strategies by which salt reduction might be achieved in developed countries such as Australia[21,28] are broadly agreed and have been proven to effectively lower population salt intakes.[39]

SALT INTAKES IN AUSTRALIA

Australian studies using gold standard 24-hour urine collections to define salt intake have showed selected population groups to be consuming between 6.5 grams and 12 grams a day. However, these studies are either outdated, non-representative, or both.[40-44] Other studies of adults based on dietary recall methods are also unlikely to provide reliable estimates of salt consumption with projected levels of daily salt intake likely to be underestimates.[45] A recent dietary survey done on Australian children[46] showed excess salt consumption to be a major issue in childhood and provides the best recent evidence on the problem in Australia.

The Australian government provides Nutrient Reference Values for Australian Adults and on the basis of the limited available evidence, estimates an average adult salt consumption of 9 g/day against a recommended Upper Limit intake of 6 g/day (2,300 mg sodium) and a Suggested Dietary Target of 4 g/day (1,600 mg sodium) for the prevention of chronic disease.[19] It is of note that the optimal level of daily salt intake is actually much less (1 to 2 g) and both government criteria represent a pragmatic compromise position.

Whilst there has been recent debate about salt intake levels in Australia, there is little doubt that they exceed government recommendations. Dietary modeling carried out by Food Standards Australia New Zealand, as part of an investigation into strategies for iodine fortification, provide current data about the food categories in Australia that contribute to dietary salt intakes (Table 1) but probably do not form a good basis for estimating absolute levels of salt intake.[47]

Table 1. Percent contribution of various food groups to salt in the Australian diet

Food Category	Percent contribution to salt intake from processed foods
Cereal and cereal products	32
Meat, poultry and game products and dishes	21
Cereal-based products and dishes	17
Savoury sauces and condiments	8
Milk products and dishes	5
All other foods	17

Adapted from Table A1.2: Contribution of foods to salt intakes from processed foods at Baseline for Australian and New Zealand target population groups from Attachment 7 of Proposal P230 – Consideration of Mandatory Fortification with Iodine for New Zealand, Final Assessment, Dietary Intake Assessment Report – Main Report
http://www.foodstandards.gov.au/_srcfiles/P230_Iodine_Fortification_Attach_7_Dietary_Intake.pdf

1. Cereals and cereal products includes grains, cereal flours and starch powders, breads and rolls, breakfast cereals, English-style muffins, crumpets, tortillas, pastas, noodles and rice.
2. Cereal-based products and dishes includes biscuits (sweet and savoury), cakes, buns, muffins (cake style), scones, slices, pastries and pastry products (sweet and savoury), pizzas, sandwiches, filled rolls and hamburgers, taco and tortilla-based dishes, savoury pasta and sauce dishes, dim sims, spring rolls, savoury rice-based dishes, pancakes, crepes, pikelets and doughnuts.
3. Meat, poultry and game products and dishes includes plain beef, lamb, pork, veal, poultry, game meats, offal, ham, bacon, sausages, frankfurts, processed meats, and mixed dishes made from these meats.
4. Milk products and dishes includes milks (plain and flavoured), evaporated milk, condensed milk, milk powders, yoghurts (plain, flavoured and fruit), creams, cheeses, ice creams and ice confections (dairy and soy-based), frozen yoghurts, custards and other dairy based desserts and soy-based beverages.
5. Savoury sauces and condiments includes gravies, savoury sauces (including dry mixes, simmer sauces, pasta sauces etc.), pickles, chutneys, relishes, salad dressings, mayonnaises, and stuffings.

DEVELOPMENT OF A SALT REDUCTION STRATEGY FOR AUSTRALIA

With population salt intakes exceeding that which is required for good health, and processed foods being the main contributor to these high intakes, there is a clear case for a national salt reduction strategy in Australia. The Australian Division of World Action on Salt and Health (AWASH), hosted by The George Institute for International Health, is a growing network of individuals and organisations concerned with salt and its detrimental effects on health. Established in December 2005, it is led by a Secretariat comprising of experts in public health, marketing and communications, and project management, with wider stakeholder input from an Advisory Group made up of representatives from research organisations, the food industry, health and consumer entities, government bodies and food and health consultants.

Convinced of the health benefits, AWASH has developed a comprehensive strategy to reduce population salt intakes. The objectives and implementation strategies were agreed following key international consultations with the WHO as part of a technical meeting on salt and health[28] and with national organisations seeking to achieve salt reduction in the United Kingdom,[35] the United States[48] and Canada.[49] These meetings provided information about the strategies that can be used to achieve population-wide reductions in salt consumption. A Senior Project Manager with prior experience of implementing the salt reduction campaign in the UK was recruited to co-ordinate the campaign. A literature review and review of the evidence to support the effectiveness of the various policy options for reducing population salt intakes in Australia was commissioned.[50] In addition, a comprehensive mapping of stakeholders in Australia was completed and meetings were convened with a range of governmental, non-governmental and industry organisations to consult on draft proposals.

Whilst several countries now have some form of salt reduction program in place,[49] many are limited in that they only target a certain sector of the food industry or a specific population group. Only the UK and Finland have comprehensive multifaceted campaigns targeting the food industry, consumer awareness and labelling. The UK and Finland are also the only countries that have shown a clearly documented impact on population salt intakes. In both countries the success of the strategies has been dependent upon the coordination of food industry reductions with changing consumer behaviour and labelling.[51,52] The main differences are that the Finnish approach involves the food industry substituting sodium chloride with Pansalt, a commercially produced potassium and magnesium enriched form of salt, whereas the UK approach is based around setting salt reduction targets for different product categories and encouraging the food industry to make reductions. The second chief difference is that the Finnish have mandated compulsory warnings on high salt foods whereas the UK is advocating for voluntary front of pack labelling to identify high, medium and low salt foods as part of a broader "traffic light" labelling scheme. Finland commenced work to reduce salt in 1975 and by 2002 had demonstrated a 3 gram reduction (from 12 to 9 g).[53] The UK FSA started working with the food industry in 2003 and launched its consumer education campaign in 2005. By 2008 it had demonstrated a 0.9 g reduction from 9.5 g to 8.6 g.[52]

It is beyond the scope of this paper to say what the most effective way of reducing salt in products is. This is a highly technical issue that varies from product to product, in accordance with consumer tastes and the market.[26] Until consumer awareness about the health benefits of less salt are widely known, there is a good argument for companies to reduce salt gradually without widely promoting the fact. However, there is no evidence from the UK, Finland or any other country to show that consumers stop buying reduced salt products. In fact, consumer demand for lower salt products in the UK has increased to the extent that companies now openly promote the fact that they are reducing salt across the range of products. For example, Marks and Spencers has had posters in its stores claiming "We are reducing salt in our products faster than you can say sodium chloride" and pot noodles have been advertised on the basis that they contain no salt. It is probably fair to say that this change to companies widely promoting salt reduction was a "tipping point"[54] for the UK strategy.

The relative speed of the impact of the UK campaign combined with the much greater likelihood of achieving voluntary action from the Australian food industry, as opposed to mandatory government legislation, led AWASH to conclude that a multifaceted 3-pronged strategy similar to the UK approach but adapted to the Australian context would be the most effective strategy for Australia. It has developed its strategy on this basis, but maintains that government leadership is required to ensure maximum impact.

THE DROP THE SALT! CAMPAIGN

In May 2007, AWASH launched the Drop the Salt! campaign. The aim of the campaign is to reduce the average salt consumption of the Australian population to six grams per day over five years. The specific objectives are (1) to achieve an average 25% reduction in the salt content of processed and catered foods, (2) to increase population knowledge of the benefits of low salt diets and (3) to promote clear labelling of foods so that the salt content is immediately apparent, helping consumers to choose lower salt foods. Information about each of these strategies and how they will be monitored is detailed below.

STRATEGIES FOR ACHIEVING SALT REDUCTION IN AUSTRALIA

The campaign has received public support from key stakeholders in government, the food industry, health and consumer organisations and the medical professions.[55]

Food Industry Strategy

A series of consultative meetings have been held with the lead umbrella organisation in the sector and some 20 major Australian retail, manufacturing and catering companies. These meetings were to agree on the key elements of a strategy to reduce salt in foods by an average of 25% over five years. There is broad industry support of the need to reduce population salt intakes. Discussion about the technical aspects of the strategy, including the devel-

Table 2. Percentage of Australian products meeting targets established by the Food Standards Agency in the United Kingdom[45] (example of foods commonly eaten at a barbecue).

	Number of products	Range of sodium content (mg/100g)	Mean sodium content (mg/100g)	FSA final sodium target (mg/100g)	Percent products meeting FSA† final targets (%)
Tomato sauce	17	355-1270	970	1000	47
Barbecue sauce	8	550-2140	804	600	18
White bread	43	420-665	491	430	16
Sausages	44	404-1340	838	550	2
Beef burgers	6	572-740	647	400	0

† Food Standards Agency

opment of individual company action plans and securing agreement on targets for salt levels in different food categories, is ongoing. Two large companies have already put in place schemes to achieve the 25% reduction in salt content recommended by AWASH, and at lest ten others have salt reduction plans in development. AWASH has established a database documenting details of the salt content of more than 7,000 packaged food products available for purchase in Australia and will be monitoring and reporting changes in the average salt content of foods by category, manufacturer and retailer on an annual basis. Initial analyses of the database have been used to prepare reports on specific areas of opportunity in Australia (Table 2) with benchmarking against target levels recommended for comparable food categories in the UK.[56]

Media and Communications Strategy

AWASH has established a dedicated website (www.awash.org.au), produced a range of consumer education materials, held two high profile national meetings[55,57] and obtained considerable print, radio and television coverage on the salt and ill health issue. Surveys of awareness about the health effects of salt[47] have shown that, whilst many consumers understand that salt is an important problem, there are considerable barriers to consuming a low salt diet (Figure 1). This survey will be repeated in 2010 to assess whether any changes have taken place.

Government Strategy

AWASH has met with senior members of the State and Federal governments of Australia and has a coordinated strategy for government engagement. There are three main objectives. The first is for the government to make salt reduction a priority as part of its national preventative health program, the second is for the government to deliver a national education program about salt (either stand-alone or as part of a broader nutritional education campaign) and the third is the implementation of an evidence-based, front-of-pack labelling scheme.

MONITORING AND EVALUATION

AWASH will be monitoring the Drop the Salt! campaign based on changes in salt levels in foods and consumer awareness as detailed above. It will also be assessing any

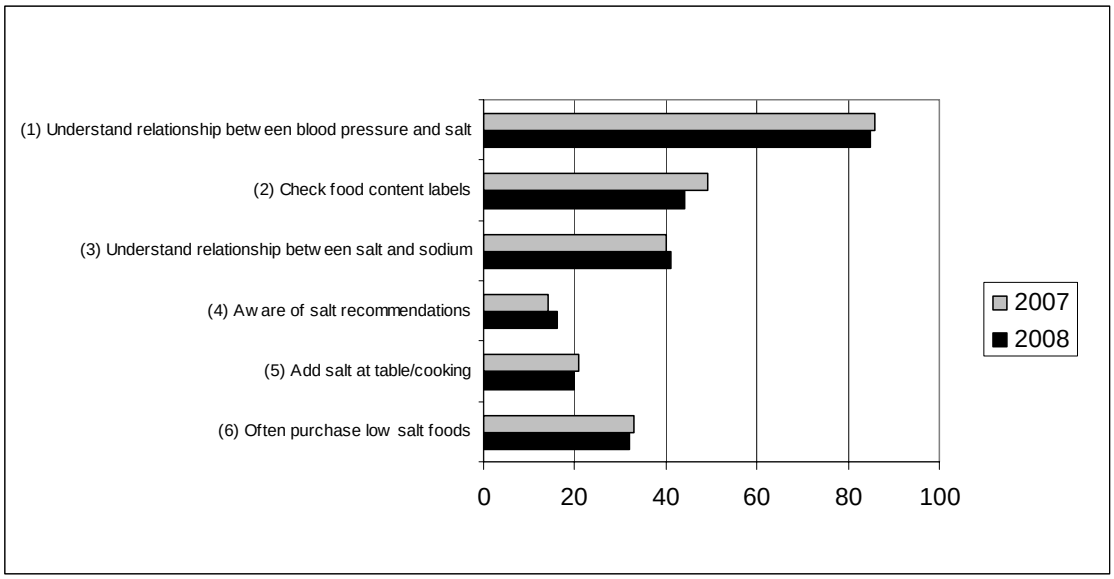

Figure 1. Consumer behaviour and awareness of salt and ill health issues in 2007 and 2008 Note: (1) percentage of consumers who understood the relationship between blood pressure and salt; (2) percentage of consumers who responded that they often checked food content labels; (3) percentage of consumers who knew that salt contained sodium; (4) percentage of consumers who knew the maximum daily amount of salt recommended for adults by the NHF; (5) percentage of consumers who add salt at the table and/or cooking; and (6) percentage of consumers who said they often purchase low salt foods.

changes in relation to media activity or government policy. However, the ultimate outcome indicator is changes in population salt intakes, but measurement will only be possible with reliable estimates of population salt intakes using 24 hour urinary analysis. AWASH is therefore urging the Federal Department of Health and Ageing to include this in the Health Risks survey planned for 2010.

CONCLUSIONS

There is a strong evidence base showing that meaningful falls in population salt consumption can be achieved[58] and that substantial health gains will derive from salt reduction.[25] The UK government strategy is taking longer to achieve targets than originally envisaged and it is most likely over optimistic for the AWASH campaign to expect to achieve the same sorts of reductions in just 5 years. However, building on the work already done in this field by the National Heart Foundation and individual corporations in Australia, the AWASH *Drop the Salt!* campaign has the potential to have a significant impact on salt intakes if sustained over the next 10 years. Substantial progress has already been made since the launch of the campaign and, against a background of renewed government interest in public health opportunities, there is a great opportunity for this program to deliver major health gains in the short-to-medium term.

The AWASH *Drop the Salt!* campaign offers a unique opportunity for the prevention of chronic disease in Australia. Like other such programs, implementation will only succeed if industry and government can be effectively engaged. However, if these key players embrace the opportunity to tackle salt reduction comprehensively, the potential for the program to deliver major health gains at low cost is almost unsurpassed.

AUTHOR DISCLOSURES

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APPENDIX

Membership of the Australian Division of World Action on Salt and Health: Secretariat: Professor Bruce Neal (The George Institute for International Health), Professor Caryl Nowson (Deakin University), Jacqui Webster (The George Institute for International Health), Jane Austin (The George Institute for International Health), Dr Rachel Huxley (The George Institute for International Health). Advisory group members: Susan Anderson (National Heart Foundation), Dr Trevor Beard (Menzies Research Institute), Megan Cobcroft (Unilever Australasia), Associate Professor Stephen Corbett (Sydney West Area Health Service), Jackie Healing (Coles), Clare Hughes (CHOICE magazine), Dr Russell Keast (Deakin University), Dr Jennifer Keogh (Commonwealth Scientific and Industrial Research Organisation), Wendy Morgan (Innovations & Solutions), Mia Sadler (The Food Group), Dr Rosemary Stanton (Independent Nutrition Consultant), Professor Stewart Truswell (University of Sydney). Advisory Group Observer: Ann Hunt – (Food Standards Australia New Zealand). Supporters: Other individual and institutional supporters are listed at www.awash.org.au/. NOTE - the details of the final opinions expressed here are those of the secretariat/authors and do not necessarily reflect the positions of advisory group members or supporters

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Jacqui Webster MA, Elizabeth Dunford MPH, Rachel Huxley DPhil, Nicole Li MIPH, Caryl A Nowson PhD, Bruce Neal FAHA

The George Institute for International Health, Sydney, Australia

澳洲一個全國鹽減量政策的發展

攝取過多食鹽已確定會導致高血壓及血管疾病。降低族群鹽量攝取的政策已被證實可以促進健康，因此國內外團體都建議應顯著減少族群鹽量攝取。鹽與健康的世界行動澳洲分會(AWASH)參與澳洲“鹽減量”運動。此運動為透過三個主要目標執行對策，即食品工業、媒體及政府，俾使 5 年內澳洲人平均食鹽攝取量降低至每天 6 公克。這個對策有能力達成快速及顯著降低澳洲的食鹽攝取量。有工業界與政府的參與，使得這個運動對於降低慢性疾病具有高效益及低成本。

關鍵字：食鹽、公共衛生、食物供應、飲食、心血管疾病