

Background:

Salt intake in India is estimated to be more than double the recommended maximum of 2000mg sodium (5g salt) /day set by World Health Organisation. High salt intake increases the risk of developing high blood pressure, the main cause of strokes and a leading cause of heart attacks and heart failure – the most common causes of death and disability in the world.¹ Excess salt consumption is estimated to cause about 600,000 deaths² each year and to be the 5th leading cause of death in India.

Traditionally the main source of salt in Indian diets is that added during cooking or at the table and from pickled vegetables. However recent years have seen a shift in the dietary habits of many Indians from traditional home cooking towards convenience foods. This is particularly so in urban areas where processed foods are increasingly available.³

The aim of this report is to identify the number of products which have information about salt on the nutrition information panel on the package label; to compare the salt content of processed food products sold in India and to benchmark the salt content of Indian products against corresponding salt targets set to be achieved in the United Kingdom by 2017.⁴

METHODS

Data Collection

Nutrition data from the FoodSwitch database of packaged food products collected from eight branches of supermarket chains in Delhi and Hyderabad, Andhra Pradesh between 2012 and 2014 was used for this report. Data was reviewed and cleaned to remove duplicate products, multipacks, and to correct data inputting errors (Figure 1).

Data Categorisation

Foods were categorised into 18 main groups⁵:

- Alcoholic beverages
- Bread and bakery products
- Cereal and grain products
- Confectionary
- Convenience foods
- Dairy and dairy alternatives
- Edible oils and oil emulsions
- Eggs
- Fish and fish products
- Fruits and vegetables

- Meat and meat products
- Non-alcoholic beverages
- Sauces and spreads
- Snack foods
- Sugars, honey and related products
- Special foods
- Unable to be categorized
- Vitamin and mineral supplements

Of these 18 main food groups, 9 (in bold) were identified as likely significant contributors to salt in the Indian diet. The 9 main food groups were then sub-categorised into specific food groups according to the food composition database criteria. For each food product, the brand

name, product name, serving size, presence of nutritional information and sodium content per 100q was recorded.

Data analysis

The proportion of products with nutrition information and the proportion of products displaying sodium information was calculated overall for each main food group, and each specific food category. In addition, for products with sodium data reported mean levels and ranges of sodium (mg/100g) were calculated for each main food group and specific food category.

Levels of salt in specific food categories were compared against the UK 2017 salt targets which provide salt targets for 76 categories of food. The proportions of Indian products known to meet the UK 2017 salt targets (i.e. reporting salt content data and having a salt content less than the target) were derived for each specific food category.

RESULTS

There were 5796 products in the 18 main food groups. Seventy-six percent of these products had a nutrition information panel (NIP), and thirty-five percent had information about the salt content reported as sodium per 100g (Table 1). NOTE - Salt in foods is usually reported as sodium. To convert the sodium content to the salt content it is necessary to multiply by 2.5 – for example 100 mg/100 g sodium = 250 mg/100 g salt.

There were 4218 products in the 9 main food groups identified as major contributors to sodium in the diet. 1539 (27%) of these products had information about salt content reported on the label (Table 2).

FoodSwitch in India

To help Indians make healthier packaged food choices and stay healthy, The George Institute India has launched 'FoodSwitch' – an innovative nutrition mobile app. Users can download the app for free from the iTunes store or Google Play and use it to scan the barcode of any packaged food product.

The 'FoodSwitch' app will display a colour coded label coloured green (good), amber or red (limit) depending upon the amount of salt in the product. It will also show the same colour coding for fats and sugars. FoodSwitch will also list similar but healthier alternatives, making it easier than ever before to make a better choice.

Key findings:

- A quarter (24%) of products do not have any nutrition information, and therefore do not meet the Food Safety and Standards Authority of India (FSSAI) national nutrition labelling requirements for processed foods (2011). The FSSAI standard requires all processed food products to include information about energy, protein, carbohydrate and fat on nutrition information panels on pack.⁷
- Two thirds of products do not list salt on the nutrition information panel and do not meet International Codex Alimentarius requirements

 an international food standard, requiring all food products to list sodium information.⁸ FSSAI does not currently require reporting of sodium content on pack.
- Some products contain excessively high levels of salt; for example papads, a commonly consumed meal accompaniment in India have a mean sodium content of 1219mg/100g with a range of 2-4000mg/100g. This illustrates that papads can be made with as little as 2mg of sodium/100g, 2000 times less sodium than the papad product with the highest sodium content.
- Less than a quarter of products meet the UK 2017 salt target, emphasising the need for a clear strategy to reduce the amount of salt added to processed foods

Mean sodium content

There was a wide range of sodium content both between and within the 9 main food groups studied. The food group with the highest mean sodium content was sauces and spreads, 2213mg/100g (range 0.0 to 21218 mg/100g) compared to the lowest mean sodium content found in meat and meat products 413mg/100g, (range 2.0-1000 mg/100g).

Within sauces and spreads the highest mean sodium content were found in: meal based sauces 5601mg/100g (range 179–21218mg/100g); pickles 4487mg/100g, (range 1600-5433) and Asian sauces 3190mg/100g (range 270-8400).

Products meeting UK 2017 salt targets

Overall 21% of products were known to meet the UK 2017 sodium targets with greatest compliance among hard cheeses (60%), pasta (56%), and canned soup (47%). Only 2 bread products were known to meet the target (Table 2).

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.

Implications:

- Incomplete nutrition information makes it impossible for people to know what they are eating and hard to make a healthier choice.
- Absent nutrition information makes it difficult to monitor amounts of salt, fat and sugar in widely consumed food products, and hold the food industry to account to reduce the unnecessary amounts of salt, fat and sugar added to processed foods.
- The high level of salt in processed food is a great public health concern; salt increases blood pressure, and thereby the risk of developing cardiovascular disease, the biggest killer worldwide.

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Clare Farrand is a Public Health Nutritionist and the Senior Project Manager for Salt Reduction at the World Health Organisation Collaborating Centre on Population Salt Reduction supporting countries to develop and implement salt reduction strategies to achieve the global target to reduce salt by 30% by 2025.

Clare has over 9 years' experience working in public health on the primary prevention of nutrition related illness. Clare previously worked in the UK for the Food Standards Agency's Nutrition Strategy Division on their successful salt reduction programme before going on to lead the International Salt Reduction Programme at World Action on Salt and Health. Clare has extensive experience in public health advocacy, stakeholder engagement and translating research in to public health action; influencing public health policies at the national and international level, supporting countries to implement effective salt reduction programmes and working with the food industry on reformulation of food products to contain less salt, fat and sugar. Clare's primary interest is reducing the growing burden of food, nutrition and diet related noncommunicable disease through effective food and nutrition related policies.

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 The University of 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: shows the proportions of food products carrying nutrition Information and the proportion of products carrying information about salt levels

Main food group	No. of products	Products with nutrition information		Products with salt da	ata (sodium per 100g)
		No	%	No.	%
Bread and bakery products	600	558	93.0%	164	27.3%
Cereal and grain products	771	514	66.7%	260	33.7%
Confectionery	346	277	80.1%	111	32.1%
Convenience foods	174	174	100.0%	117	67.2%
Dairy and dairy alternatives	289	284	98.3%	131	45.3%
Edible oils and oil emulsions	142	134	94.4%	39	27.5%
Eggs	7	5	71.4%	1	14.3%
Fish and fish products	46	45	97.8%	32	69.6%
Fruit and vegetables	1219	546	44.8%	339	27.8%
Meat and meat products	61	47	77.0%	12	19.7%
Non-alcoholic beverages	659	549	83.3%	184	27.9%
Sauces and spreads	572	532	93.0%	281	49.1%
Snack foods	504	452	89.7%	203	40.3%
Sugars, honey and related products	145	85	58.6%	35	24.1%
Special foods	158	158	100.0%	74	46.8%
Unable to be categorised	15	9	60.0%	5	33.3%
Vitamin and mineral supplements	82	32	39.0%	11	13.4%
Alcohol	6	2	33.3%	1	16.7%
Total	5796	4403	76.0%	2000	34.5%

Table 2: shows the mean and range of sodium for specific food categories within the 9 main foods groups, and the percentage of products meeting the UK 2017 salt targets

Specific food group	No. of products	Products with sodium data %	Mean (mg/100g)	Range (mg/100g)	UK 2017 target	% Products known to meet the UK2017 target
Bread and bakery products	597	27%	473	2.0-4000.0		
Biscuits, plain dry	41	20%	460	300-670	380	10%
Biscuits, savoury	44	5%	736	708-764	700	0%
Biscuits, sweet filled	168	26%	214	14-472	380	21%
Biscuits, sweet unfilled	139	40%	254	6-701	380	31%
Bread	32	19%	1116	2.0-4000	450	6%
Papad (other bread)	120	28%	1219	2.0-4000	1000	16%
Cake mixes	13	8%	909	-	180	
Cakes	40	35%	244	40-1600	280	30%
Cereal and grain products	766	34%	474	0.0-7250		
Breakfast cereals	213	62%	478	0-2110	400	33%
Cereal and nut based bars	18	28%	33	0-75.1	380	28%
Couscous	1	100%	100		70	0%
Plain Noodles	12	42%	292	21-600	350	25%
Instant Noodles	87	43%	1245	26-7250	350	13%
Pasta	74	58%	52	0-1000	350	57%
Rice	119	20%	6	0-38	70	20%
Flavoured Rice	16	0%				
Plain cereal based products	226	5%	799	4-2970	400	4%
Convenience foods	167	71%	1337	0.0-5378		
Ready meals	85	66%	503	0-1400	380	18%
Canned soup	15	87%	275	200-501	250	47%
Dry soup	66	74%	2573	180-5378	250	15%
Salad	1					
Dairy and dairy alternatives	289	45%	502	0.0-2000		
Cheese, hard	15	93%	716	152.1-1095	800	60%
Cheese, soft	9	67%	900	456.6-1520	270	0%
Cheese, processed	31	87%	1260	840-1730	720	0%
Paneer	6	50%	181	50-400	270	33%
Cream	3	67%	324	34-614		0%
Desserts	65	57%	342	0-2000	110	26%
Ice cream	65	20%	68	43-180		
Milk	71	34%	60	0-320		
Yogurt	24	25%	35	28-40		
Fish and fish products	46	70%	457	38.0-887		
Canned fish	16	88%	421	48-870	360	31%
Other canned fish	2	100%	710	550-870	600	50%
Frozen fish	28	57%	457	38-887	300	18%
Fruit and vegetables	1218	28%	764	0.0-8000		
Fruit	108	41%	43	0-539		
Herbs and spices	555	20%	1433	0-8000		

Jams and marmalades	85	48%	35	0-387	250	47%
Nuts and seeds	142	34%	318	10-1100		
Vegetables	179	0%				
Canned Vegetables	44	89%	112	0-384	50	52%
Uncanned Vegetables	5	0%				
Dried Vegetables	11	27%	281	23-446		
Plain frozen vegetables	4	25%	70		275	25%
Pickled vegetables	57	75%	1719	1-8000	1500	37%
Fresh packaged Fruit and Vegetables	28	36%	355	10-1407		
Meat and meat products	61	20%	413	2.0-1000		
Meat alternatives	24	8%	51	36-65	750	8%
Canned meat	5	0%	-	-	300	
Frozen meat	18	22%	367	100-504	300	6%
Salami and cured meats	2	0%	-	-	650	
Sausages and hotdogs	6	17%	410	-	550	17%
Plate and meat spreads	1	100%	1900	-	550	0%
Other meat products	5	80%	746	614-1000	300	0%
Sauces and spreads	572	49%	2213	0.0-21218		
Asian sauces	44	55%	3190	270-8400	1500	16%
Gravies and stocks	10	10%	0		450	10%
Marinades	7	57%	3408	2037-4559	1500	0%
Meal-based sauces	137	40%	5602	179-21218	1500	6%
Cranberry sauce	2	50%	0		480	0%
Mustard sauces	9	33%	1580	2020-2600	480	0%
Other sauces	13	69%	451	350-940	480	46%
Pesto	3	33%	470	-	650	0%
Pasta sauces	56	82%	419	256-850	370	27%
Table sauces	62	56%	1061	0.7-2400	680	10%
Tomato paste	8	63%	1143	184-2030	680	25%
Mayonnaise	18	50%	631	18-1500	500	22%
Salad dressings	26	88%	759	1.0-2100	600	23%
Vinegar	16	38%	123	0-720	1000	38%
Spreads	55	56%	540	156-1700	550	35%
Relishes	3	67%	645	440-850	1500	67%
Pickles	96	25%	4488	1600-5433	1500	0%
Chutneys	7	29%	1284	301-2266	480	14%
Snackfoods	502	40%	665	0.0-2300		
Corn chips	26	50%	786	58-1464	800	23%
Extruded snacks	60	15%	491	106-1179	800	13%
Indian snack foods	288	38%	586	0-2000	1000	33%
Popcorn	31	84%	837	200-1500	800	39%
Potato crisps	64	39%	691	359-1090	580	14%
Snack packs	33	67%	818	40-2300	800	36%
Totals	4218	36%				16%

Table 3: Examples of lowest and highest sodium products of some of the key food categories

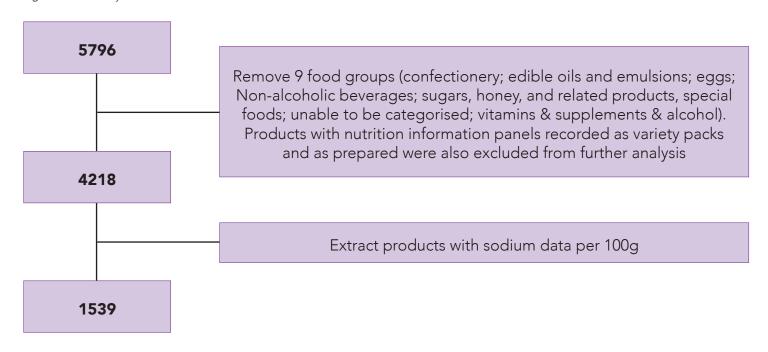
Food category	Lowest levels sodium products			Highest levels sodium products					
	Brand Name	Product Name	Sodium (mg/100g)	Brand Name	Product Name				
Bread and bakery products									
Biscuits, plain dry	Mc Vitie's	Mc Vitie's Marie	300	Kraft	Kraft Ritz Crackers Krekers	670			
Biscuits, sweet filled	Karachi Bakery	Karachi Bakery Chand Biscuits	14	Cadbury	Cadbury Oreo Choco Creme	472			
Biscuits, sweet unfilled	Karachi Bakery	Karachi's Bakery Pure Vegetarian Fruit Biscuits	6	Tiffany	Tiffany Digestive Light Natural Wheat Biscuits	701			
Other bread - Papad	Arul	Arul Appalam	2	777	Sri Ganeshram's 777 Brand Appalam	4000			
White bread	Modern Family	Modern Family Shakti White Sandwich Bread	440	Harvest	Harvest Gold White Bread	497			
Cakes	Cogon	Cogon Tropical Fruit Flavoured Pudding	40	Cakees	Cakees Plum Cake Extra Rich	1600			
			ereal and grain produ	cts					
Breakfast cereals	Bambino	Bambino Roasted Vermicelli	0	Gits	Gits Rava Dosai Mix	2110			
Ready to eat breakfast cereal	Waitrose	Waitrose Seriously Nutty Maple & Mixed Nut Crisp	10	Kellogg's	Kellogg's Corn Flakes With Real Almond & Honey	650			
Cereal and nut based bars	Heartland	Heartland Organic Oatsli Orange & Coconut Cereal Bar	0	Natural's	Natural's Almond Treat Energy Bar	75			
Plain Noodles	Dragon	Dragon Super Special Quality Instant Noodle Pack	21	Blue Dragon	Blue Dragon Express Instant Noodles	600			
Instant Noodles	Koka	Koka Noodles Spicy Shrimp Flavour	281	Knorr	Knorr Soupy Noodles Yummy Chicken	2486			
Filled/flavoured pasta	Essential Waitrose	Essential Waitrose Short Cut Spaghetti In Tomato Sauce	170	Gowardhan	Gowardhan Go Natural Cheese Shredded Italian Pasta	1000			
Rice	Waitrose	Waitrose A Handful Of Sushi Rice	0	Lal Qilla	Lal Qilla The Original Basmati Rice Traditional Special Old Malai	38			
Convenience foods									
Ready meals	MTR	MTR Kesar Suji Halwa Kesar Bhath Tasty Delights Ready To Eat	0	Maiyas	Maiyas Kharabath Instant mix	1400			
Canned Soup	Heinz	Heinz Cream of Tomato Soup With A Twist of Chilli	200	Sil	Sil Tomato Soup La Tomatina	501			
Soup	Batchelors	Batchelors Slim A Soup Golden Vegetable	180	Knorr	Knorr Chinese Hot & Sour Veg Soup	5378			

Dairy and dairy alternatives								
Cheese, hard	Go	Go Cheese Wedges Soft & Creamy	152	Dodoni	Dodoni Feta	1095		
Cheese, soft	Lemnos	Lemnos Sweet Chilli Cream Cheese	457	Milky Mist	Milky Mist Premium Cheese Spread Garlic	1520		
Cheese, processed	Amul	Amul Cheese Spread Punchy Pepper	840	Britannia	Britannia Slimz Cheesy Slices	1730		
Paneer	Milky Mist	Milky Mist Paneer	50	Gowardhan	Gowardhan Fresh Paneer Classic Block	400		
Cream	Amul	Amul Fresh Cream	34	Blue Bird	Blue Bird Whipped Cream Instant Topping	614		
Desserts	MTR	MTR Rasogolla Tasty Delights Sweets	0	Nestle	Nestle Milkmaid Creations Badaam Kheer Mix	2000		
Ice cream	Kwality Walls	Kwality Wall's Fruit N Nut	43	Mother Dairy	Mother Dairy Kulfi	180		
Milk	Blue Dragon	Blue Dragon Coconut Milk Light	0	Waitrose	Waitrose Love Life Milk Chocolate Drink	320		
		F	ish and fish alternative	es				
Canned fish	Oceans Secret	Oceans Secret Tuna Chunks In Sunflower Oil	48	Costa's	Costa's Sardines In Tomato	870		
Other canned fish	John West	John West Smoked Oysters In Barbecue Sauce	550	Ayum Brand	Ayam Brand Mackerel Steaks Fried With Sweet Chilli	870		
Frozen fish	Oceanaa	Oceanaa Squid Rings Breaded	38	Sumera	Sumeru Five Senses Large Prawns	887		
			Fruit and vegetables					
Herbs and spices	Colman's	Colman's Mustard Powder	0	unknown	Tify Exotic Barbeque Seasoning	8000		
Jams and marmalades	Stute	Stute Diabetic Morello Cherry Extra Jam With Sweetener	0	Fruitoman's	Fruitoman's Mixed Fruit	387		
Nuts and seeds	Dcc Delicious	Dcc Delicious Cashews Dry Roasted Cream Onion	10	Wonderful	Wonderful Pistachios Salt & Pepper	1100		
Canned Vegetables	Epicure	Epicure Organic Bean Cuisine	0	American Garden	American Garden Baked Beans In Tomato Sauce	384		
Fresh packaged Fruit and Vegetables	Essential Waitrose	Essential Waitrose Small Potatoes In Water	10	Golden Brown	Golden Crown Button Mushroom	1407		

Fruit and vegetable	S					
Meat alternatives	Mori-Nu Silken	Mori - Nu Silken Tofu Great For Entr'ees & Desserts	36	Mori-Nu Silken	Mori - Nu Silken Tofu Extra Firm For Grilling Stir Fry & Sautéing	65
Frozen meat	Al Kabeer	Al Kabeer 6 Seekh Kabab Chicken	100	Cambay Tiger	Cambay Tiger Prawn Boomerang	504
Other meat products	Keya	Keya Simply Fantastic Chicken Kofta	614	Sumera	Sumeru Farm Fresh Back Bacon	1000
			Sauces and spreads			
Asian sauces	Blue Dragon	Blue Dragon Szechuan Pepper Shot Bursting With Flavour	270	Pantai	Pantai Light Soy Sauce	8400
Marinades	Kikkoman	Kikkoman Teriyaki Marinade Thick	2037	Kikkoman	Kikkoman Teriyaki Marinade With Roasted Garlic	4559
Meal-based sauces	Ching's	Ching's Secret Manchurian Miracle Masala	179	Ustad Banne Nawab's	Ustad Banne Nawab's Ethnic Hyderabadi Vegetable Biryani Masala	21218
Mustard sauces	Essential Waitrose	Essential Waitrose English Mustard	2020	Remia	Remia Moutarde De Dijon	6600
Other sauces	Prego	Prego Tomato Basil Garlic Italian Sauce	350	Essential Waitrose	Essential Waitrose Tartare Sauce	940
Pasta sauces	Ragu	Ragu' Light Tomato & Basil Pasta Sauce	256	Barilla	Barilla Olive	850
Table sauces	Heinz	Heinz Tomato Ketchup	700	American Garden	American Garden Premium Hot Sauce	2400
Tomato paste	Ayum Brand	Ayam Brand Tomato Puree	184	Waitrose	Waitrose Sundried Tomato Paste In Olive Oil	2030
Mayonnaise	Sil	Sil Orange Marmalade Wakee Orange	18	Alfa	Alfa Mayonnaise	1500
Salad dressings	Remia	Remia Thousand Island Salad Dressing	1	Colman's	Colman's Fresh Garden Mint Concentrate	2100
Spreads	Skippy Natural	Skippy Natural Creamy Peanut Butter Spread	156.2	Blue Dragon	Blue Dragon Sweet Chilli Dipping Sauce Original	1700
Relishes	Waitrose	Waitrose Kalamata Olive & Sun - Dried Tomato Tapenade	440	Waitrose	Waitrose Green Olive, Coriander & Lemon Tapenade	850
Pickles	Unknown	Beevi's Prawn Pickle	1600	Sanjeev's Kapoor Khazana	Sanjeev Kapoor's Khazana Hot Mango Pickle	5433
Chutneys	Smith & Jones	Smith & Jones Bhelpuri Chutney	301	Ching's	Ching's Secret Schezwan Chutney	2266.6

Snackfoods								
Corn chips	Haldiram's	Haldiram's Nagpur Corn Flakes Mixture Indian Snacks Casse - Croute Indiens	58	Italo's	Italo's Four Cheeses Flavor Baked Corn Chips	1464		
Extruded snacks	Win2	Win2 Magic Crunch Corn Snack With Strawberry Filling	106	Munch King	Munch King Cheese Curls	1178		
Indian snack foods	Charlie's	Charlie's Mora Sev	0	Jabsons	Jabsons Khakhra Roasted Wheat Crisps	2000		
Popcorn	Popitas	Popitas Salty Sensation Instant Popcorn	200	Act II	Act II Golden Sizzle Instant Popcorn	1500		
Potato crisps	Haldiram's	Haldiram's Halke Fulke Salted Potato Chips	359	Lorenz	Lorenz Naturals Mild Paprika	1090		
Snack packs	Charlie's	Charlie's Butter Chakli	40	Garden	Garden Mix Farsan	2300		

Figure 1: Data analysis





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