# DEVELOPING A DATABASE FOR SALT CONTENT MONITORING

When engaging with the food industry on salt reduction and building a case for salt reduction with policy makers, it is important to have a clear idea of the levels of salt present in foods that are a focus of the salt reduction strategy. Developing a comprehensive database should therefore be a key element of the strategy and should ideally include all packaged foods available in supermarkets, as well as data from meals and other food products available in the out of home sector. This information can be obtained directly from the manufacturer (via packaging or company websites), or via independent analysis of a product/meal.

# **Sources of Information**

#### **Nutrition Information Panels**

- If nutritional information available on product packaging is a common/legal practice, then this will likely be sufficient for the database, providing there is a good level of industry compliance.
- Data can be collected by visiting supermarkets, grocery stores and local convenience stores and collecting the information, be it in the form of photographs, the use of app technology, or manually writing down the information [1]. If this information will be published, evidence in the form of dated photos is recommended.
- Depending on the retail market share in the country, it may be possible to visit one large store, in an urban area, of each leading retail chain to gain data that will be representative of the products available. However, if the market is dominated by smaller chains and local convenience stores, sampling of both urban and rural stores may be necessary.

#### Food Companies/Brands

- Where information on packaging is not mandatory, companies may be able to provide their information directly. This requires early engagement with the food industry, and a level of trust that the companies will offer up accurate and up to date information, at regular intervals.
- This information may also be available on company websites. Similarly, some restaurants and food outlets, especially larger restaurant chains, may have the nutritional information online or upon request. This requires early engagement and a certain level of trust that the restaurants will provide accurate information at regular intervals.

# **BENEFITS OF A DATABASE**

It is easy to build and maintain a databse. Long term, a comprehensive database should ideally include all packaged foods available in supermarkets, as well as data from meals and other food products available in the out of home sector. A comprehensive database is a useful tool for several reasons:

- Provides concrete information regarding the range of salt content of foods available in the market and is far more accurate than a standard food composition database which provides general nutrition information as opposed to product specific data
- Allows assessment of variation in the salt content of similar food products in the same category e.g., the salt content of breads in the Eastern Mediterranean region can range from 4.28 g/kg to 12.41 g/kg [2]. If there is variation, then this indicates that reductions are possible, making a case for salt reduction targets
- Enables a baseline to be established, from which progress can be tracked during the salt reduction journey
- Will identify key players in the food industry, and can help prioritise action - e.g., if a wellknown brand is consistently producing the saltiest food, then early engagement would be a priority
- Will identify the percentage of products with nutrition labelling in place, and aid any ongoing work to develop and implement back-and front of-pack nutrition information, or improve existing systems, in the country.

#### **Direct Chemical Analysis**

- Where nutrition labelling is not available, products can be purchased and sent to registered laboratories for analysis. For the out of home sector in particular, chemical analysis will likely be the only option for collecting accurate nutritional information.
- Whilst being the most accurate form of data collection, it is costly.

**Morocco example:** Bread samples from different bakeries in the country's twelve regions were collected in 2020, and salt content assessed using inductively coupled plasma mass spectrometry [3].

#### Products to Include in Database

Where resources are limited, and comprehensive data collection is not possible, known salty products and leading sources of salt in diets in the country/region should be prioritised.

# **Data Collection**

It is important to bear in mind there will likely be a large and rapidly changing number of products available on the market, with new product development and changes to recipes occurring throughout the year. Depending on the number of products available, and the categories of interest for monitoring purposes, regular data collection should be considered, in line with data required for monitoring purposes. Data can be collected throughout the collection year.

Field researchers, students, interns, NGOs and public health networks can all aid with data collection. Public health nutrition students should be prioritised, where they may be able to combine data collection and analysis as part of their studies. Therefore, building relationships with researchers and universities is paramount.

#### **Example Database Format**

The templates below display all relevant information that should be captured during data collection. If salt content is the priority, then this will be the only information required from nutrition information panels. However, if other information is available on packaging then these should be collected too to help guide, inform and influence overall public health policy decisions.



#### Packaged Food: Example of database format

Product ID	Collection Date	Data Source	Category	Sub- category	Brand Name	Product Name	Package Size (g or ml)	Serving Size (g or ml)	Sodium per 100g or per 100ml	Sodium per serve (g or ml)	Salt per 100g or per 100ml	Salt per serve (g or ml)

- Product ID i.e. barcode: this code is unique to the product, and is important in identifying products and validating information, particularly when comparing over time product names may change slightly but will likely still have the same barcode
- Collection Date: this allows tracking over time, and is necessary for publishing purposes as industry may challenge the data, particularly if a recipe has changed, so it is important to note the date the data was collected
- Data Source: to confirm where information was obtained e.g. product packaging, chemical analysis
- Category and Subcategory: a detailed categorisation tree will need to be established prior to collection. This is important in grouping similar groups of food to compare progress made between companies and will enable reporting that is easily interpretable and well understood. There are existing food databases and categorisation trees that can be used as a template but may need altering depending on the country's specific needs. For example, bread products would belong to the category Bread, but could be sub-categorised into traditional bread, flat bread, French-style baguettes etc.
- Brand Name: this allows filtering by company
- Product Name: as printed on packaging
- Package Size: some products may be available in various package sizes
- Serving Size: if information is provided on packaging, this is useful to establish if serving size is consistent across companies.
- Sodium mg/100g or ml and per serve and Salt g/100g and per serve: some foods may provide sodium content or salt content. This can also be recorded and converted to salt equivalent (or vice versa) using a simple calculation sodium (g) x 2.5 = total salt equivalent (g). It may be useful to keep track of what is often recorded, for public health communications such as leaflets and TV adverts, i.e., if sodium is printed on product packaging, salt reduction messaging should focus on both sodium and salt

Where products require a level of processing prior to consumption, i.e. reconstituted food (stock, instant noodles), nutrition information both 'as sold' and 'as consumed' should be collected if available. 'As consumed' can also be calculated according to instructions printed on the packaging.

Where companies do not provide sodium/salt data on packaging, all available information should still be collected but the absence of salt should be noted in the database to help track the number of products without sodium/salt labelling. This can help advocate for better nutrition labelling.

#### Out of Home Sector: Example of database format

Product ID	Collection Date	Data Source	Food Category	Sub- category	Outlet Name	Outlet Address	Product / Dish Name	Serving Size (g or ml)	Sodium per 100g or per 100ml	Sodium per serve (g or ml)	Salt per 100g or per 100ml	Salt per serve (g or ml)

- Dish/food ID: as OOH meals do not have a barcode, a unique identifier must be assigned to each dish e.g. 0001, 0002 etc
- Collection Date: record the date that the data was obtained
- Data Source: Confirm where data was obtained e.g., company website, chemical analysis or direct from the company
- Category and Subcategory: a detailed categorisation tree will need to be established prior to collection
- Outlet Name: Record the name of the outlet or restaurant where the dish is available.
- Outlet Address: Record the address of the outlet where the sample was obtained. This will help to distinguish between different branches of a chain, or outlets with similar names.
- Dish Name: as printed on the menu, or according to local knowledge of dishes. If no name is available for the dish, provide a description instead
- Serving size: if information is provided, this is useful to establish if serving size is consistent across outlets. If data is obtained via chemical analysis, this information will be determined by the laboratory
- Sodium mg/100g or ml and per serve: some outlets may provide sodium content instead of salt on their websites or menus.
- Salt g/100g and per serve: record salt content as stated on websites or direct from companies, or calculate based on sodium data

The database can be as comprehensive as needed. Where available, the following could also be recorded:

- Price
- Symbols or health/nutrition claims
- Use of front of pack labelling
- Energy (kJ/kcal)
- Total fat g/100 g and per serve
- Saturated fat g/100 g and per serve
- Carbohydrate g/100g and per serve
- Sugars g/100 g and per serve
- Protein g/100 g and per serve
- Fibre g/100 g and per serve
- Micronutrients g/100g and per serve
- ingredients list
- Country of origin

If resources exist to store images alongside data collected, these would be useful in verifying data, and at the very least can hold all useful information for use at a later date, if time/resource is limited. When collecting data directly from manufacturers, if possible, request specific details by providing them with a spreadsheet template (as above).

# **Quality Assurance**

To ensure data entry is accurate, factor in additional validation or 2 step confirmation to minimise human error. This can be done through spot checking/auditing 5-10% of products. When inputting data, several controls should be performed. All data should be checked for accuracy, completeness and consistency. For example:

- Do total macronutrients per 100g of food add up to 100g?
- Is information for salt g/ 100g, or sodium mg/100g?

#### Data Storage

In the short term, data can be stored in the form of a spreadsheet but bear in mind information will build up. It is likely that data will need to be stored on multiple spreadsheets for different years. More elaborate databases and systems can be developed; these come at an additional cost, but they are more beneficial in the long term and more secure than simple spreadsheets.

Longer term, the aim should be to encourage government ministries, such as the Ministry of Health, to adopt this data collection tool and either add to existing national food composition databases or establish a new food composition database. The WHO EMR Office is currently undertaking a project, in collaboration with countries in the region, to develop a food composition database that can be used for this purpose when it is published.

#### Publication/Analysis and Reporting

Publication and dissemination of the data is important to advocate for salt reduction with policymakers, to enhance awareness of salt content of foods across stakeholders and among the public, and to publicly assess and monitor salt reduction progress made by the food industry. Demonstrating variation and highlighting products with the most and least salt will help apply pressure on the industry, drive competition and encourage reformulation. Data can also be used in academic publications, which will provide additional peer-reviewed evidence and help monitor industry, comparing companies and their products available in the country to products available on a global scale [4-9].



# References

- 1. Dunford E, Crino M, Neal B. Utilizing Smartphone Technology To Monitor Improvements In The Healthiness Of The Food Supply. FASEB, Experimental Biology 2016 Meeting Abstracts: Volume30, IssueS1;409.5-409.5
- 2. Al Jawaldeh A and Al-Khamaiseh M. Assessment of salt concentration in bread commonly consumed in the Eastern Mediterranean Region. EMHJ 2018;24:18-24 https://applications.emro.who.int/EMHJ/v24/01/EMHJ\_2018\_24\_01\_18\_24.pdf
- 3. Bouhamida M, Lazrak M, Lahmam H, Lachguer SA, Guennoun Y, Ammari LE, et al. Determination of salt content in traditional and industrial Moroccan white bread by inductively coupled plasma mass spectrometry. Pan Afr Med J. 2022 May 30 [cited 2022 Dec 2];42(79). Available from: https://www.panafrican-med-journal.com/content/article/42/79/full
- 4. Pombo-Rodrigues S, Hashem KM, He FJ, MacGregor GA. Salt and sugars content of breakfast cereals in the UK from 1992 to 2015. Public Health Nutr. 2017 Jun;20(8):1500-1512. doi: 10.1017/S1368980016003463. Epub 2017 Feb 7. PMID: 28166847.
- 5. Brinsden HC, He FJ, Jenner KH, Macgregor GA. Surveys of the salt content in UK bread: progress made and further reductions possible. BMJ Open. 2013 Jun 20;3(6):e002936. doi: 10.1136/bmjopen-2013-002936. PMID: 23794567; PMCID: PMC3686219.
- 6.Hashem KM, He FJ, Jenner KH, et al Cross-sectional survey of salt content in cheese: a major contributor to salt intake in the UK. BMJ Open 2014;4:e005051. doi: 10.1136/bmjopen-2014-005051
- 7. Cardoso S, Pinho O, Moreira P, Pena MJ, et al. Salt content in pre-packaged foods available in Portuguese market. Food Control, 2019, Volume 106, 106670.
- 8. Temme, E.H.M.; Hendriksen, M.A.H.; Milder, I.E.J.; Toxopeus, I.B.; Westenbrink, S.; Brants, H.A.M.; Van der A, D.L. Salt Reductions in Some Foods in The Netherlands: Monitoring of Food Composition and Salt Intake. Nutrients 2017, 9, 791.
- g.Haron, H.; Hiew, I.; Shahar, S.; Michael, V.; Ambak, R. A Survey on Salt Content Labeling of the Processed Food Available in Malaysia. Int. J. Environ. Res. Public Health 2020, 17, 2469.

