

ASSESSING SOURCES OF SALT

In order to effectively tailor salt reduction policies to a country, it is necessary to assess the sources of salt in the population's diet. Measuring salt levels in these sources at regular intervals is a key monitoring and evaluation strategy.

Dietary sources of salt vary worldwide. In the South East Asia region for example, salt added during cooking to rice, vegetable and noodle dishes is the leading source, along with salt added at the table, pickles, chutneys and salty sauces. Typical sources in the European region include bread, processed meats, cheeses, ready meals and salty snacks. In the Eastern Mediterranean region, sources are likely to be similar to Europe with bread being a leading source, followed by processed meats, soft cheeses, labneh-style yogurts, olives and pickles. However, as countries globally continue to experience nutrition transition, processed, packaged foods will increasingly become sources of salt in population diets.

Methods to Assess Sources of Salt

Ideally, large-scale ongoing national diet and nutrition surveys would be utilized to assess population intake of a range of nutrients, applying food composition databases – either the country's own database, a database from a neighbouring country or a validated international database. In the Eastern Mediterranean region, the WHO Office is working in collaboration with countries in the region to develop a new food composition database, which when launched, will provide a key reference tool.

The following methods can be used to assess sources of salt in the diet [1]:

- Primary data sources – food consumption surveys done as part of comprehensive dietary surveys or as stand-alone surveys examining dietary salt intake.
 - 24-hour dietary recalls – Systematic questionnaire / survey designed to capture all foods consumed in a defined 24-hour period
 - Food Frequency Questionnaire (FFQ) – collects information on participants' usual dietary intake of products from a pre-determined list over a specified period (usually one year)
 - Three- or Seven-Day Diaries – Written records of all foods and beverages (including amounts) consumed over three or seven days
- Indirect/secondary data sources
 - Adapting existing surveys e.g., household expenditure surveys conducted by agriculture or finance departments. Questions can be inserted to give a broad overview of consumption
 - National sales/purchasing data can reveal the most purchased foods, including salt and salty sauces

These will identify:

- the foods that people eat that are high in salt, and the amounts and frequency of consumption
- the amount of salt added at the table and during cooking
- the intake of high-sodium foods that are culturally or regionally specific

Method	Advantages	Disadvantages
Primary Data Sources		
24-hour Dietary Recall	<p>Most used for population-level surveys</p> <p>Relatively quick and easy to administer</p> <p>Easily adapted to be culturally sensitive</p> <p>Captures information on food preparation</p>	<p>Requires extensive analysis to categorise every item</p> <p>To gain an indication of usual intake, participants must be interviewed on a range of week and weekend days or repeat recalls are needed</p>
FFQ	<p>Relatively inexpensive</p> <p>Represents usual intake as intake of products as assessed across a year</p> <p>Can be made as long or as succinct as needed to gain necessary information</p> <p>Easier to analyse than 24-hour dietary recall</p>	<p>Less accurate than a 24-hour recall-Relies on generic memory and has more cognitive difficulty</p> <p>Can take time to administer, as the FFQ list may contain up to 200 items</p>
Three- or Seven-Day Diary	<p>Most accurate method</p>	<p>Requires significant commitment from participants and is the most time consuming</p> <p>Analysis can be complex</p>
Secondary Data Sources		
Household Expenditure	<p>Easy to implement, as the survey is ongoing</p>	<p>Limited to a subsample of the population</p> <p>Does not account for products or losses other than for food preparation</p> <p>Known to overestimate salt intake</p>
Sales Level Data	<p>Detailed, accurate sales information available direct from manufacturers and retailers</p>	<p>Data expensive to purchase</p> <p>No information on who is purchasing the products or how much of a product is consumed</p> <p>No information available for the out of home (OOH) sector</p>

When to Assess Sources of Salt

2-hour dietary recalls/FFQs should be carried out as a first step, to enable development of a salt reduction strategy. Ideally, while conducting the 24-hour dietary recall/FFQ, trained study staff should conduct a brief physical examination including blood pressure, body weight, height, waist and hip circumference measurements, following established protocols. KAP surveys can also be administered during the same survey.

Who should conduct the survey?

Interviews can be conducted by trained personnel from institutions, research staff, students or contracted temporary field staff. Partnerships can be formed with local universities to coordinate survey planning, writing the survey protocol, identifying an appropriate sample of participants and data collection.

Basic training, in person or virtually, must be provided to those administering the 24-hour dietary recall/FFQ. Those administering the survey must be able to read and write, speak local languages and be aware of local cultures and contexts. Photocards should be supplied to enable them to provide examples of portion sizes and aid participant responses. Field supervisors are required to check over forms for completeness prior to data entry and analysis.

Survey Protocol and Participants

Review Existing Information

Determine the existing information, if any, on sources of salt in the diet through a literature search, reviewing government or NGO reports, determining if national level surveys have already taken place and through key informant interviews with governmental staff e.g., Ministry of Health or members of key food federations (where applicable).

Target Population and Sample Size

To assess sources of salt in typical diets in the population, where population can refer to anything from a community to the national population, it is necessary to gather views that would be representative of that population. Therefore, participants should be recruited with diverse:

- Demographics – sex, age, religion, ethnicity, area of country (urban, rural)
- Socio-economic Background – income level, employment status
- Other characteristics – Education level, known medical conditions

Therefore, stratified sampling is recommended.

FFQs are designed to provide estimates of habitual intake by assessing consumption of specific food groups over a specified time period (usually the previous year). To ensure results from a 24-hour dietary recall are representative of habitual intake, it is necessary to either distribute interviews across all weekdays and weekends across the entire sample of participants or conduct two recalls with participants on both a weekday and a weekend. This should inform sample size required.

Develop Survey Protocol

It is necessary to develop a survey protocol, to guide the implementation of the survey. The protocol should cover:

- Research questions – this may be first survey in the country and therefore the research question would simply refer to gathering baseline data.
- Survey aims – is the aim simply to determine sources of salt, or an investigation of multiple nutrients?

- Target population
- Data collection methods – annex data collection tools (i.e., 24-hour recall data collection sheets or FFQ) in the protocol
- Data management and storage – how will confidentiality be ensured? How will data be stored securely (e.g., locked filing cabinets, secure servers)?
- Ethics applications and obtaining local authority permissions – as the survey involves human participation, ethics approval will be required. How will permission be obtained from the local authorities of the areas the survey will operate in?
- Gaining participant consent – how will written consent be obtained and recorded?
- Budget – required for field staff and/or consultants, supplies e.g., questionnaires, computers for data entry and analysis, ethics costs if applicable, travel, dissemination.
- Timeline – ideally the survey would be carried out within one calendar year, avoiding religious and national holidays and adverse weather conditions which could affect the safety of field staff. Will participants be interviewed on the weekend to capture those who work during the week? How long will it take to train the interviewers? How many days will be required for data entry and analysis?
- Time frame for recall (e.g., past year or past month): should be guided by the study objective and also may be informed by other factors such as seasonality etc.
- Dissemination – Further to using the data to inform salt reduction strategy and programme development, a report can be created or results published in a peer-reviewed journal

Conducting a 24hr Dietary Recall

The dietary recall should be administered using the multiple-pass method [2]:

Quick List

Ask participants for a list of everything they ate and drank the previous day, midnight to midnight. Interviewers should allow participants to speak uninterrupted during this time.

Forgotten foods

The interviewer should probe for any food or drink forgotten during the Quick List, by reviewing all items mentioned with the participant.

Time and occasion

Collect the time, eating occasion (breakfast, lunch, dinner, snack) and place eaten (home, outside of the home) of each food and drink on the quick list. If eaten outside of the home, the interviewer should probe to determine the specific location e.g., street food vendor, restaurant.

Detail

For each item on the quick list, collect:

- A detailed description of the food/drink, including but not limited to:
 - If it was homemade or bought outside the home
 - Brand name, if applicable
 - If homemade, what are the ingredients?
 - How much of each ingredient was added?
 - Was salt/other seasoning added? If so, how much – assessed using household measures (spoons, measuring cups) or pictures
- The amount consumed
 - Identify if all the food and drink was consumed in one go, were second helpings consumed and were there leftovers.
 - Identify if the meal was shared with another person

Final probe

The interviewer conducts a final probe for anything else consumed, by reviewing all food and drink consumed in the past 24 hours.

Analysing the Data

Data cleaning and entry

Field supervisors should check all questionnaires to ensure they are complete and legible. Where errors or missing information are identified, the supervisor should check first with the interviewer. If necessary, the survey participant may need to be contacted for clarification or the interview may need to be repeated.

Data can be entered into specialised dietary analysis software, or into an Excel spreadsheet, depending on resources available.

Data analysis

All data must then be coded to match the food categories recorded on the data collection sheet to items within a food composition table, or to a purpose-built database containing detailed nutrition information (see Developing a Database for Salt Content Monitoring protocol). All those involved in the coding process should be trained and familiar with the foods and drinks that will be captured as part of the survey. A standardised coding protocol should be developed by those carrying out the coding process to ensure consistent coding across all products.

Once data has been coded to match food composition data, specialised software or Excel can be utilised to calculate average total salt intake (based on the total salt content of foods listed in the recall) and the percentage contribution of each food category to that salt intake.

Conducting an FFQ

Building the Questionnaire

During the design of the survey, it is important to determine the survey aims and to design the questionnaire accordingly. FFQs can contain anywhere from 20-200 items:

- If the aim is to ascertain consumption of known salty foods, then the questionnaire can be short
- If the survey is intended to have multiple uses, the questionnaire should be comprehensive

To build the questionnaire, researchers with in-depth knowledge of local food and culture can build a list; a sub-sample of participants (10-20) can complete a three-day diary or a 24-hour dietary recall; or a literature review and key informant interviews with government staff e.g., Ministry of Health can be utilised. The questionnaire can be made semi-quantitative by adding in questions around typical portion sizes, using household measures or photos to represent portion sizes [3].

Example FFQ with common breads and cheeses eaten in Egypt

[illegible]

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Total salt consumption can be calculated from consumption frequency, portions (if captured) and weight of portion. From this, the percentage contribution of each category to mean intakes can be calculated.

References

1. Accelerating Salt Reduction in Europe. A country support package to reduce population salt intake in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2020 (https://www.euro.who.int/data/assets/pdf_file/0006/457611/Accelerating-salt-reduction-in-Europe.pdf, accessed 11 July 2022)
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