This module is part of the Centers for Disease Control and Prevention’s Sodium Reduction Toolkit: A Global Opportunity to Reduce Population-Level Sodium Intake. The toolkit is designed to provide government agencies, international organizations, and other stakeholders with a brief overview, tools, and information necessary to inform strategies to reduce population-level sodium intake.

An awareness of a diet/health relationship is generally considered a first step in motivating consumers to make dietary changes.¹
This module in the Sodium Reduction Toolkit covers consumers and health care providers’ knowledge, attitudes, and behaviors regarding sodium and cardiovascular health. Other modules in the toolkit provide information about the global impact of sodium on health; methods to evaluate sodium intake through biomarkers, indirect estimation, and dietary assessments; analysis of sodium in the food supply; strategies for using sodium-reduction policy interventions to reduce sodium intake; and the process of translating and sharing evidence-based research. Each module also includes examples and a list of top 10 resources.

Please note that throughout this module, the term “salt,” also known as sodium chloride, is not synonymous with the term “sodium.” Modules in this series use the term “salt” when referring to sodium chloride and sodium when referring to dietary sodium. A list of conversions for salt and sodium is available on the toolkit web page.
The objectives of the Knowledge, Attitudes, and Behaviors module are to:
1. Discuss opportunities for monitoring people’s knowledge, attitudes, and behaviors about sodium reduction.
2. Describe various data collection methods used to monitor knowledge, attitudes, and behaviors.
3. Provide select examples of how organizations and countries monitor knowledge, attitudes, and behaviors about sodium.

Please note that the examples and recommendations provided should be used for training purposes only and do not necessarily imply that they are appropriate for use in your country.
Consumer awareness can drive action aimed at sodium reduction. However, being aware does not guarantee that people will take effective actions to reduce sodium intake. Understanding the multiple factors that impact knowledge, attitudes, and behaviors can help when monitoring sodium reduction.

- Knowledge: general awareness
- Attitudes: personal view, opinion, or feeling
- Behaviors: manner of acting

Background
The Socio-Ecological Model illustrates how individual, interpersonal, organizational, and environmental factors affect knowledge, attitudes, and behaviors.\(^1\) Age, gender, race/ethnicity, socioeconomic status, and health status are individual factors that may influence knowledge, attitudes, and behaviors. Data from the United States show that women,\(^2\) those with higher socioeconomic status,\(^2,3,5,6\) and older individuals\(^9\) are more likely to reduce sodium intake and read Nutrition Facts Panel labels.

Interpersonal factors, such as relationships with friends and family, also can influence cultural and social norms. Studies report that the family environment, such as parents’ eating and child-feeding behaviors, can influence eating behaviors of children well into adulthood.\(^10\)

Communities and organizations may provide educational programs or interventions to influence knowledge, attitudes, and behaviors. The environment where individuals live and work can also influence knowledge, attitudes, and behaviors. For example, healthful food procurement policies may improve the food environment and increase individuals’ ability to choose healthier food.
When monitoring knowledge, attitudes, and behaviors, the following areas may be considered\textsuperscript{11,12}:

- Do people know what the main sources of sodium are in their diet?
- Do they know how much sodium they consume or how much salt they add to food?
- Do they know about the negative health consequences of consuming excessive sodium?
- Do they feel that excessive sodium intake is a personal issue?
- Do they feel responsible for taking actions to reduce their sodium intake?
- Do they use nutrition labels when choosing what foods to purchase?
- How do sodium reduction attitudes and practices of health care providers affect their patients?

The next slide describes various data collection methods used to monitor knowledge, attitudes, and behaviors.
Data Collection Methods

<table>
<thead>
<tr>
<th>Methods</th>
<th>Benefits</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>In-person interview (IPI)</td>
<td>• Least selection bias&lt;br&gt;• Highest response rates&lt;br&gt;• Visual materials may be used</td>
<td>• Most expensive&lt;br&gt;• Most time consuming&lt;br&gt;• Least anonymous</td>
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<tr>
<td>Telephone interview</td>
<td>• Quicker than IPI&lt;br&gt;• Less expensive than IPI&lt;br&gt;• More anonymous than IPI</td>
<td>• Selection bias&lt;br&gt;• Can be expensive&lt;br&gt;• Can be time consuming</td>
</tr>
<tr>
<td>Mail or Internet survey</td>
<td>• Most anonymous&lt;br&gt;• Email: least expensive</td>
<td>• Selection bias&lt;br&gt;• Language/literacy&lt;br&gt;• Low response rates&lt;br&gt;• Mail: most time to complete</td>
</tr>
<tr>
<td>Focus group</td>
<td>• Key informants/experts&lt;br&gt;• More in-depth responses</td>
<td>• Expensive&lt;br&gt;• Need trained interviewer&lt;br&gt;• Time consuming</td>
</tr>
<tr>
<td>Observational study</td>
<td>• Identify gaps/barriers</td>
<td>• Time consuming&lt;br&gt;• Less privacy</td>
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Common methods for collecting data about knowledge, attitudes, and behaviors include in-person or telephone interviews, mail or Internet surveys, focus groups, and observational studies. In-person interviews or talking to someone one-on-one allows a researcher to collect more in-depth information than can be obtained if a participant completed a survey. In-person interviews often have the least selection bias and highest response rates.

According to the Centers for Disease Control and Prevention, selection bias occurs “when the treatment and control groups involved in [a survey] are initially statistically unequal in terms of one or more of the factors of interest.” However, in-person interviews can be more costly than other methods because it requires trained interviewers and travel time. Furthermore, because this method is conducted in person, there is no anonymity. As a result, some participants may respond to questions in a way that they think will be considered more normal or socially acceptable. They may not give truthful responses.

Telephone interviews or talking to someone is another way to monitor knowledge, attitudes, and behaviors. Compared to in-person interviews, this method can be quicker, less expensive, and more anonymous than in-person interviews. However, this method often has the most selection bias because only participants with a telephone can be interviewed.

Compared to in-person and telephone interviews, mailed and Internet-based surveys offer the most anonymity. However, like telephone interviews, this method is subject to selection bias because only participants with a mailing address or computer can participate. Furthermore, participants who are not proficient in the survey language or have low literacy levels may have difficulty participating. Compared to Internet-based surveys, mailed surveys take the most time to complete.

Researchers also can turn to focus groups. A focus group usually consists of 6 to 12 people with similar characteristics and common interests who are led by a trained interviewer to share feelings, beliefs, and attitudes about a specific issue. For example, you may choose to conduct a focus group with subject matter experts to assess their attitudes about reducing sodium in packaged foods. You may also consider a focus group with individuals to determine their ability to accurately estimate the amount of sodium in prepared foods. This method may provide more in-depth information than individual interviews can. However, focus group participants may give answers they perceive as normal or socially acceptable. Focus groups may be time consuming and expensive. And because information is obtained from a small sample size, it is not generalizable to the larger population.

Watching and listening to consumers as they perform activities can provide helpful information when planning consumer nutrition education campaigns or programs. Observations can help identify gaps between what an individual reports and what is observed. For example, in countries where the majority of sodium comes from salt added during cooking or at the table, observing salt use may provide insights into how much salt consumers use and what food products they purchase. However, this method can be time consuming.

The following slides provide select examples of what organizations and countries are doing to monitor knowledge, attitudes, and behaviors about sodium.
In 2010, the World Health Organization and the Pan American Health Organization published the *Protocol for Population Level Sodium Determination in 24-Hour Urine Samples.* This report was developed to assist countries with sodium reduction initiatives.

A special section of the report includes a questionnaire about knowledge, attitudes, and behaviors toward sodium. Countries may use the questionnaire as a framework to create their own questions. Examples of questions include:

1. Do you add salt to food at the table?
2. In the food you eat at home, is salt added in cooking?
3. How much salt do you think you consume daily?
4. Do you think that a high-salt diet could cause a serious health problem?
5. How important to you is lowering the sodium in your diet?
6. Do you do anything on a regular basis to control your salt intake?
The Centers for Disease Control and Prevention uses several methods to monitor and evaluate the U.S. population’s knowledge, attitudes, and behaviors about sodium. Some sources include the Behavioral Risk Factor Surveillance System and the Styles surveys by Porter Novelli. The following slides provide a brief overview of each source.
The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone-based survey conducted each year by state health departments. The survey collects information on health risk behaviors, preventive health practices, and health care access related to chronic diseases and injury among U.S. adults aged 18 years and older.

The Centers for Disease Control and Prevention has added a sodium- or salt-related behaviors module to the survey. States can use these data to better monitor and understand individual behaviors and actions related to sodium reduction. Questions in the module are provided next.
The sodium- or salt-related behaviors module includes the following questions:

- Are you currently watching or reducing your sodium or salt intake?
- How many days, weeks, months, or years have you been watching or reducing your sodium or salt intake?
- Has a doctor or other health professional ever advised you to reduce your sodium or salt intake?

Just like the questions in the *Protocol for Population Level Sodium Determination in 24-Hour Urine Samples*, countries may choose to modify or use these questions to monitor knowledge, attitudes, and behaviors about sodium.
The Centers for Disease Control and Prevention partners with Porter Novelli, a public relations firm, to include specific salt-related questions in a series of Styles surveys used to assess consumers’ and health care providers’ knowledge, attitudes, and behaviors on various issues. The following slide provides an example of a Styles survey.
The DocStyles survey takes a comprehensive look at sodium reduction attitudes and practices of health care providers. This slide details the type of questions health care professionals are asked. A 2010 study showed that more than half of health care providers agreed that most of their patients should reduce sodium intake.\textsuperscript{17} Although health care providers advised their patients with hypertension to reduce sodium intake, they were less likely to give the same advice to their African American patients and patients aged 40 years and older.

Although most Americans consume sodium from processed foods, many health care providers advised their patients to use less salt when cooking or at the table. These results indicate that more effort may be needed to educate health care providers about counseling their patients.
In summary, an understanding of population knowledge, attitudes, and behaviors related to sodium can help you develop effective population-based approaches to sodium reduction. Countries may choose to:

• Coordinate with international organizations, public health agencies, and relevant stakeholders to improve surveillance about public knowledge and opinions on sodium,
• Provide technical support or resources to improve surveillance efforts, and
• Include sodium- or salt-related behavior questions into already existing surveys.

Considerations

- Improve surveillance about public knowledge and opinions on sodium
- Provide technical support or resources
- Include sodium- or salt-related behavior questions into already existing surveys
For additional information on survey development, please visit the resources presented on this slide.

- Web Center for Social Research Methods
  www.socialresearchmethods.net/kb/survey.php
- American Association for Public Opinion Research
  www.aapor.org/Question_Wording1.htm
- Roper Center for Public Opinion Research
  www.ropercenter.uconn.edu/education/interpretive_analysis_questionnaire.html
Top 10 Resources


The resources included here provide additional background about the food supply and sodium.
Top 10 Resources


References for the information presented in this module are available for download. Click on the paperclip icon below.
This concludes The Knowledge, Attitudes, and Behaviors module. Please review the other modules to learn more about strategies for reducing sodium intake in your country.

We are interested in hearing your feedback on this module. Your feedback and comments will be used to make training improvements and better meet the needs of participants. Please click on the link below to provide your feedback.

www.surveymonkey.com/s/GlobalSodiumReductionKnowledgeAttitudesBehavior
Knowledge, Attitudes, and Behaviors: References