

Consumer attitudes, knowledge, and behavior related to salt consumption in sentinel countries of the Americas

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ABSTRACT

Objective. To describe individual attitudes, knowledge, and behavior regarding salt intake, its dietary sources, and current food-labeling practices related to salt and sodium in five sentinel countries of the Americas.

Methods. A convenience sample of 1 992 adults (≥ 18 years old) from Argentina, Canada, Chile, Costa Rica, and Ecuador (approximately 400 from each country) was obtained between September 2010 and February 2011. Data collection was conducted in shopping malls or major commercial areas using a questionnaire containing 33 questions. Descriptive estimates are presented for the total sample and stratified by country and sociodemographic characteristics of the studied population.

Results. Almost 90% of participants associated excess intake of salt with the occurrence of adverse health conditions, more than 60% indicated they were trying to reduce their current intake of salt, and more than 30% believed reducing dietary salt to be of high importance. Only 26% of participants claimed to know the existence of a recommended maximum value of salt or sodium intake and 47% of them stated they knew the content of salt in food items. More than 80% of participants said that they would like food labeling to indicate high, medium, and low levels of salt or sodium and would like to see a clear warning label on packages of foods high in salt.

Conclusions. Additional effort is required to increase consumers' knowledge about the existence of a maximum limit for intake and to improve their capacity to accurately monitor and reduce their personal salt consumption.

Key words

Sodium; attitude; knowledge; behavior; consumer organizations; Americas.

Excessive salt intake is a major public health concern (1). It causes hyperten-

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sion (2), and epidemiologic and pathophysiologic evidence associates excessive intake of salt with several adverse health conditions such as stroke and coronary heart disease (2), kidney stones (3), gastric cancer (4), osteoporosis (5), and, indirectly, even with obesity (6). Cardiovascular diseases are a major cause of mortality worldwide and increased blood pressure is the most important risk factor for cardiovascular

disease (7). Estimates indicate that increased blood pressure is responsible for approximately half of the global cardiovascular disease burden (7).

The World Health Organization (WHO) recommends a maximum level of salt intake per person of < 5 g/day (1). Although reliable, national representative information on salt consumption remains scarce; available data indicate that most populations worldwide have an av-

erage salt intake per person > 6 g/day; in many Eastern European and Asian countries, it is even higher than 12 g/day (8). Specifically, in the Americas, excessive levels of salt intake are found in recent estimates from Argentina (12 g/day) (9), Brazil (11 g/day) (10), Canada (8 g/day) (11), Chile (9 g/day) (12), and the United States of America (8.7 g/day) (13).

Efforts to reduce dietary salt are recommended by WHO to be based on: 1) monitoring and evaluating how much salt is being consumed; identifying dietary sources of salt; determining consumer attitudes, knowledge, and behavior toward dietary salt as a health risk; 2) reducing the amount of salt added to food; and 3) introducing programs to increase consumer knowledge and health behavior to reduce dietary salt consumption (WHO United Kingdom) (13, 14). In September 2009, the Pan American Health Organization (PAHO) established an expert group to examine excessive dietary salt as a health risk in the Americas, issue evidence-based policy recommendations for salt reduction in the region, and develop tools and resources to aid the region to reduce dietary salt intake (15, 16). This expert group has set a goal for the region to obtain a gradual and sustained reduction in salt intake to reach an average level per person of < 5 g/day by 2020 (12).

The primary aim of this research is to describe individuals' attitudes, knowledge, and behavior regarding salt intake; dietary sources of salt; and current food-labeling practices related to salt and sodium in five sentinel PAHO countries.

METHODS

Study design and sampling strategy

This research is a transversal study. Participants were 18 years or older, coming from Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito). In Argentina, Chile, Costa Rica, and Ecuador consumer organizations were invited to conduct the survey locally. These organizations were, respectively, Unión de Usuarios y Consumidores, Filar Rosario; Conadecus; Fundación Bandera Ecológica; and Tribuna. In Canada, N.R.C.C. at the University of Calgary oversaw implementation of the survey. Each organization was equipped with

the study protocol, containing clear and objective instructions about the procedures to be adopted in relation to the sampling strategy, data collection, and initial organization of the information.

The survey was executed between September 2010 and February 2011. At each study site, the organization conducting the survey was oriented to first verify the effectiveness of the questionnaire, provided in Spanish except in Canada where it was done in English. Next, each organization selected shopping malls or major commercial areas (e.g., the intersection of two shopping streets) to position its researchers for data collection (with a minimum of 2 and a maximum of 15 at each site).

A minimum of 400 participants were to be sequentially approached in each study site, making it possible to estimate the frequency of any answer in the questionnaire with a confidence level of 95% and a maximum error of about 5 percentage points (17). Data collection was conducted during business hours on weekdays and was to continue up to the completion of the minimum number of interviews required. The interviewers approached passing consumers and invited them to take part in a study using a questionnaire about attitudes, knowledge, and behavior related to salt and sodium consumption in five countries of the Americas; they stated that the study was conducted in partnership between the local organization, Consumers International, and PAHO. The interviewer stated that, by answering the questionnaire the participant expressed implied consent to participate. If a potential participant declined to participate, the researcher would repeat the process by approaching the next person. After obtaining consumers' consent, the researcher was instructed to read and fill out the questionnaire according to the responses, always respecting the order of questions. Local sites were allowed to use printed forms or to record the answers directly on a laptop. Results from participants who failed to provide a response to the demographic section of the questionnaire or to more than 75% of questions were excluded from the analysis.

Survey instrument

A questionnaire containing 33 questions was designed to address knowledge (e.g., difference between salt and sodium), attitudes, and behavior related

to salt intake; intention and actions taken to reduce salt intake; the presence of chronic diseases (e.g., high blood pressure, heart failure); labeling preferences; and participants' demographics. For consistency throughout the questionnaire the term "salt" or "salt/sodium" was used on all questions.

The first block (four questions) addressed participants' demographic characteristics (gender, age, level of education, and presence of children under age 16 living in the household). The second block (seven questions) assessed participants' attitude statements related to salt intake and health.

In the third block (10 multiple choice questions and 4 open-answer questions), participants were asked to identify: the frequency with which they added salt to foods during cooking and at the table, their personal belief about their current salt intake, health conditions related to high salt intake, the importance of reducing dietary salt and sodium consumption and actions taken to achieve this goal, knowledge about the existence of a maximum limit for salt intake, the difference between salt and sodium, and the use of food labels to guide choices. A set of five questions was used to assess participants' preferences related to how the salt and sodium content of packed foods is displayed on labels.

The questionnaire was developed by a subgroup of the PAHO expert group, revised in consultations with experts within the PAHO expert group, and field-tested in focus groups of participants in Latin America and Canada (Appendix 1). Questions were developed based on the experience and expertise of the expert group members and on questions used in previous surveys (18–20).

Data analysis

Data collected at each study site were grouped. Quality and consistency of data were verified for each country individually and for the entire data set. This paper presents descriptive estimates of the main topics the survey explored. The frequency (and corresponding 95% confidence interval) of each topic was described for the total sample and stratified by country. Additionally, the importance conceived by the participant to reduce his or her salt intake and the percentage of participants claiming to know the existence of a recommended maximum value

for salt intake was also explored according to gender, age group, and education.

All data obtained from the questionnaires were organized by using the software Stata for Windows version 10.1.

The study protocol was approved by the Ethics Committee of the University of Calgary in Canada. Data collection in Argentina, Chile, Costa Rica, and Ecuador was done by Consumer international field staff and does not include ethical approval.

RESULTS

Sample characteristics

A sample of 2 000 participants was initially obtained. From this sample, four individuals in Costa Rica and three in Ecuador failed to provide valid information on age (18 years or older), while one individual in Ecuador failed to answer more than 75% of the questionnaire and thus were excluded from the analysis. A total of 1 992 individuals provided a valid response to the entire questionnaire and were included in the study. Slightly more than half were female (55%) and almost one-half were between 18 and 34 years old. Approximately 85% had at least completed high school and 34% declared the presence of children under age 16 living at home (Table 1).

Attitudes, knowledge, and behavior

Approximately 70% of participants stated they generally were in good health (ranging from 56% in Chile to

85% in Canada), whereas 80% mentioned trying to eat a healthy diet. On the other hand, 45% of participants stated they felt too much pressure to eat a healthy diet. Almost 90% agreed that eating a diet high in salt can cause serious health issues (ranging from 76% in Ecuador to 98% in Argentina) but only 13% of participants believed they personally consumed too much salt. The number of respondents indicating they ate too much salt reached its minimum in Ecuador (4%) and its maximum in Canada (26%). Approximately 73% of participants indicated they tried to reduce their consumption of fat, while a smaller percentage of participants (61%) aimed to reduce their salt intake. The proportion of participants aiming to reduce salt intake was associated with the capacity to recognize high sodium intake as a health threat (χ^2 test, $P < 0.05$). Almost one-half of participants indicated they knew the amount of salt food contains (ranging from 34% in Ecuador to 62% in Chile) and 50% also indicated that the amount of information available on food labels was sufficient. The percentage of respondents satisfied with the amount of information present on food labels reached its minimum in Canada (34%) and its maximum in Ecuador (72%) (Table 2).

More than 30% of participants believed that limiting their intake of salt was very important (Table 3) while 44% believed it was somewhat important (data not shown). This characteristic was also associated with the capacity to recognize high sodium intake

as a health threat (χ^2 test, $P < 0.05$). This awareness was greater in women (40%) than in men (26%) and tended to increase with age, ranging from 24% for the population aged 18–24 years to 68% for the population aged 65 years or older. There was a tendency for higher percentages of people to give high importance to salt reduction in the high and the low education categories. The number of participants giving high importance to reducing their salt intake reached its minimum in Ecuador (23%) and its maximum in Argentina (43%).

Only 26% of participants reported knowing the existence of a recommended maximum value of salt intake (Table 4) and only 7% of participants were able to correctly identify the value (data not shown). The percentage was greater in females than in males (29% and 22%, respectively) and tended to increase with education, ranging from 15% to 35% in the lowest to highest education categories. No relationship with aging was found. Knowledge of the existence of a maximum recommended value for salt intake reached its minimum in Argentina (6%) and its maximum in Canada (54%).

Labeling

Only about 35% of the people interviewed stated that they read nutrition labels on food packages always or often, ranging from 24% in Costa Rica to 58% in Canada (Table 5). On the other hand, a slightly higher percentage (40%) men-

TABLE 1. Demographic characteristics of participants ($n = 1\,992$) in five sentinel countries of the Americas,^a 2010

Variable	Total participants		Argentina (No. = 400)		Canada (No. = 399)		Chile (No. = 400)		Costa Rica (No. = 396)		Ecuador (No. = 397)	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Gender												
Male	44.1	41.9–46.3	41.8	36.9–46.6	39.1	34.3–43.9	48.5	43.6–53.4	48.5	43.6–53.4	42.6	37.7–47.4
Female	55.9	53.7–58.1	58.3	53.4–63.1	60.9	56.1–65.7	51.5	46.6–56.4	51.5	46.6–56.4	57.4	52.6–62.3
Age group (years)												
18–24	21.4	19.6–23.2	11.3	8.1–14.4	36.8	32.1–41.6	19.8	15.8–23.7	31.8	27.2–36.4	7.3	4.7–9.9
25–34	27.3	25.4–29.3	26.0	21.7–30.3	23.8	19.6–28.0	30.8	26.2–35.3	32.3	27.7–36.9	23.7	19.5–27.9
35–44	18.7	17.0–20.4	17.8	14.0–21.5	11.5	8.4–14.7	26.0	21.7–30.3	15.4	11.8–19.0	22.9	18.8–27.1
45–54	16.1	14.5–17.7	16.3	12.6–19.9	10.3	7.3–13.3	17.5	13.8–21.2	10.4	7.3–13.4	25.9	21.6–30.3
55–64	9.7	8.4–11.0	13.5	10.1–16.9	6.5	4.1–8.9	4.8	2.7–6.8	7.3	4.8–9.9	16.6	13.0–20.3
≥ 65	6.8	5.7–7.9	15.3	11.7–18.8	11.0	7.9–14.1	1.3	0.2–2.3	2.8	1.2–4.4	3.5	1.7–5.3
Education												
None and primary	15.2	13.6–16.8	35.0	30.3–39.7	11.3	8.2–14.4	7.3	4.7–9.8	9.6	6.7–12.5	12.8	9.5–16.1
Secondary	46.0	43.8–48.2	41.0	36.2–45.8	40.4	35.5–45.2	55.0	50.1–59.9	47.2	42.3–52.1	46.3	41.4–51.3
Higher	38.8	36.7–40.9	24.0	19.8–28.2	48.4	43.5–53.3	37.8	33.0–42.5	43.2	38.3–48.1	40.8	36.0–45.6
Children under age 16 at home	34.3	32.2–36.4	43.8	38.9–48.6	20.3	16.3–24.3	31.3	26.7–35.8	35.9	31.1–40.6	40.3	35.5–45.1

Note: CI: confidence interval.

^a Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito).

TABLE 2. Summary of answers to survey (Appendix 1) of self-reported attitudes, knowledge, and behavior related to health, diet, and salt consumption ($n = 1\,992$) in five sentinel countries of the Americas,^a 2010

Statement	Percent agreeing with statement					
	Total	Argentina	Canada	Chile	Costa Rica	Ecuador
My health is generally good.	72.4	79.8	84.7	55.8	67.9	74.1
I try to eat a healthy diet.	80.3	84.3	90.0	76.3	71.0	80.1
There is too much pressure to eat healthily these days.	45.1	40.8	58.4	54.0	28.5	43.8
I believe that eating a diet high in salt can cause serious health problems.	88.5	97.5	93.2	89.0	86.9	75.6
I think I consume too much salt. ^b	12.9	12.5	26.1	11.5	10.1	4.3
I try to minimize the amount of fat I eat.	72.6	78.8	79.7	70.5	63.4	70.8
I try to minimize the amount of salt I consume.	60.7	70.8	66.7	65.5	54.0	46.3
I don't know the difference between salt and sodium. ^c	75.6	89.0	73.1	82.0	63.9	70.0
I know in general how much salt food contains.	47.6	39.8	51.6	62.0	50.5	34.0
I think there is sufficient nutritional information on labels of food and drinks.	50.4	44.0	34.1	59.3	42.7	72.0

Source: Attitude statements from Appendix 1: Survey on knowledge, attitude and behavior toward dietary salt and health.

^a Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito).

^b Appendix 1: question 3.

^c Appendix 1: question 10.

TABLE 3. Percentage of participants who conceive high importance of reducing their salt and sodium intake according to gender, age group, and education ($n = 1\,992$) in five sentinel countries of the Americas,^a 2010

Variable	Percent of participants					
	Total	Argentina	Canada	Chile	Costa Rica	Ecuador
Gender						
Male	25.6	34.3	28.4	22.8	25.8	17.4
Female	40.0	49.4	36.3	47.8	39.6	27.1
Age group (years)						
18–24	23.6	13.3	22.1	32.9	20.8	34.6
25–34	29.7	35.6	27.4	34.7	30.7	17.4
35–44	30.2	32.4	28.3	34.6	44.3	14.1
45–54	34.6	32.8	51.2	32.9	37.5	29.1
55–64	47.9	63.5	46.2	63.2	65.5	24.2
≥ 65	67.9	83.6	64.3	60.0	30.0	38.5
Education						
None and primary	41.1	55.7	22.2	37.9	31.6	24.4
Secondary	28.9	31.7	34.6	32.9	28.6	16.8
Higher	36.2	43.8	34.6	39.3	37.9	29.2
Total	33.6	43.1	33.2	35.7	32.9	22.9

Source: question 6 from Appendix 1: Survey on knowledge, attitude and behavior toward dietary salt and health.

^a Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito).

tioned paying attention to health claims on packages. Almost 30% preferred to see information on the amount of both salt and sodium on nutrition labels rather than values on salt and sodium individually. More than 80% would like food labeling to indicate high, medium, and low levels of salt or sodium and would like to see a clear warning label

on packages if foods are high in salt. Almost half the participants preferred food labeling to indicate salt or sodium per portion rather than per total amount per package and more than 70% would like food labeling to indicate salt (or sodium) as a percentage of the amount recommended to be eaten per person per day.

DISCUSSION

Through data collected in five sentinel countries in the Americas, this study was able to report important findings about consumers' attitudes, knowledge, and behavior related to salt intake and food labeling preferences. Almost 90% of participants associated excessive intake of salt with the occurrence of adverse health conditions, more than 60% indicated trying to reduce their current intake of salt, and more than 30% believed reducing dietary salt to be of high importance. Meanwhile, three-quarters of participants (74%) declared they did not know about the existence of a recommended maximum value of salt or sodium intake (ranging from 94% in Argentina to 46% in Canada) and only about half of them (47%) indicated they knew the content of salt in food items. These results indicate that, while some knowledge related to excessive salt intake is already well disseminated, there remains a great need for more knowledge propagation.

This survey is the first one to analyze consumers' attitudes, knowledge, and behavior related to salt intake in developing countries. Similar studies have been conducted in developed countries such as Australia (21) and Canada (20, 22).

Although the results show that most participants were aware that salt and sodium consumption is an important health issue, the fact that only a minority recognize the existence of a recommended maximum level of sodium intake or believe they consume a high amount of salt and sodium is a reason for concern. This study did not estimate actual consumption of sodium; however, external evidence shows that current intake of sodium in American countries far exceeds recommended maximum levels of consumption (8, 9, 11–13). This finding endorses the hypothesis that individuals are not effective at controlling their sodium intake, in part because they do not recognize that they personally consume too much sodium, even if they recognize that other people consume too much (17). This fact proves the need to reduce the salt content of processed foods and to implement additional interventions to help increase individuals' awareness of the content of salt in food items and thus of their salt intake. Participants in this study favored warning

TABLE 4. Percentage of participants claiming to know the existence of a recommended maximum value of salt and sodium intake according to gender, age group, and education (n = 1 992) in five sentinel countries of the Americas,^a 2010

Variable	Percent of participants					
	Total	Argentina	Canada	Chile	Costa Rica	Ecuador
Gender						
Male	22.0	3.0	43.5	17.6	37.2	9.0
Female	29.4	8.6	60.8	27.5	37.3	11.6
Age group (years)						
18–24	31.8	8.9	55.2	22.4	26.4	0.0
25–34	25.1	8.7	49.5	18.3	41.7	4.3
35–44	24.3	5.6	60.9	24.3	37.9	10.7
45–54	23.8	6.2	56.1	21.7	47.5	14.0
55–64	25.3	3.7	42.3	42.1	55.2	18.2
≥ 65	24.6	3.3	58.1	50.0	20.0	8.3
Education						
None and primary	14.8	2.1	46.7	31.0	24.3	4.3
Secondary	22.6	4.3	56.0	19.6	29.9	5.7
Higher	34.7	15.6	54.2	25.7	48.2	17.4
Total	26.2	6.3	54.1	22.8	37.3	10.4

Source: question 10 from Appendix 1: Survey on knowledge, attitude and behavior toward dietary salt and health.

^a Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito).

TABLE 5. Summary of responses concerning relationship between food labeling and salt and sodium consumption (n = 1 992) in five sentinel countries of the Americas,^a 2010

Statement	Percent agreeing with statement					
	Total	Argentina	Canada	Chile	Costa Rica	Ecuador
I always or often read nutrition labels on food packages.	34.9	28.0	58.1	32.8	24.7	30.7
I always or often pay attention to indications on packages like “no added salt,” “low in salt,” “light,” and “free of trans fat.”	40.2	35.3	47.6	56.0	35.6	26.2
I prefer to see information on the amount of salt and sodium on nutrition labels on food packages rather than on any of them individually.	28.2	31.0	31.3	46.3	14.9	17.4
I would like labeling of food indicating high, medium, and low levels of salt or sodium.	81.2	88.0	70.7	84.8	80.8	81.9
I would like to see a clear warning label on the package if foods are high in salt or sodium.	85.8	93.3	75.4	91.8	87.9	80.9
I prefer labeling of food indicating salt or sodium per portion rather than per total amount per package.	47.9	53.0	42.1	55.5	36.9	51.9
I would like labeling of food indicating salt or sodium as a percentage of the amount recommended to be eaten per person per day.	73.7	88.5	76.2	73.8	81.8	48.1

Source: questions from Appendix 1: Survey on knowledge, attitude and behavior toward dietary salt and health.

^a Argentina (Cañada de Gómez, Villa Gobernador Gálvez, and Rosario), Canada (Calgary), Chile (Santiago), Costa Rica (San José), and Ecuador (Quito).

labels on foods that clearly indicate high or low salt content as a mechanism to help them reduce their salt consumption.

More than half of participants stated that they tried to minimize their intake of dietary salt. The frequency of participants trying to reduce dietary salt intake was related to the capacity to recognize a

high sodium intake as a potential health threat. The same situation was found in the number of individuals placing high importance on reducing their salt and sodium intake. This study reinforces the findings of previous studies demonstrating that consumers tend to be positively influenced by health communication

aimed at educating them about the importance of reducing their salt intake (23). It is worth mentioning that the highest percentage of consumers aware of the risks associated with excessive consumption of salt was found in Canada, a country where extensive actions to improve populations' awareness and reduce salt consumption have been implemented for more than 5 years (15, 24).

The large proportion of consumers in this study who stated they did not know the difference between salt and sodium is also a matter of concern. Although most participants reported not knowing the difference between salt and sodium, an impressive proportion of those who reported knowing the difference failed to correctly identify what the difference was. On average, a correct answer was obtained for only 1 in 9 people in Costa Rica, going down to 1 in 45 in Ecuador (data not shown). This lack of basic nutrition knowledge could lead to misinterpretation of or inability to read nutrition labels on food packages (traditionally information is displayed as sodium content) (25). While half the participants in Canada reported they read nutrition labels always or often, only one-third of participants from the other countries stated this behavior. Still, it is known that these findings could actually overestimate real nutrition label use as they rely on self-reported information instead of more accurate measures (26, 27). These responses were validated by the small amount of participants reporting they knew the content of salt in food items. Raising consumers' awareness may increase their use of nutrition labels and thus the purchase of foods with a low sodium content. To be able to recognize dietary sources of sodium is an important step in reducing consumption at the individual level. This ability gains even more importance in countries where the majority of salt intake comes from processed food items, such as Canada (28) and Argentina (9).

Thus, changes in nutrition labels and food packages are likely to improve the ability of consumers to identify the sodium content of food items. Consumers in this study did not show a specific preference between salt or sodium data on nutrition labels. In fact, the largest share of participants wanted to have both salt and sodium mentioned. While almost 40% of participants reported already paying attention to health claims

on food packages (such as “no added salt” or “low in salt”), the vast majority of them stated they would like to see clear and objective information on food packages (such as a clear warning when foods are high in salt or sodium). Similar results have been found in the United Kingdom (29, 30) with the traffic light labeling system, which is expanding to other European countries on a voluntary basis. In a study conducted in the United Kingdom with 2 932 consumers, use of the traffic light labeling system favored consumers’ understanding of nutritional information compared with traditional labeling, suggesting that this more explicit but simple labeling might transmit nutritional messages in a more effective way than traditional labeling (30).

Important limitations in the design of this study should be noted. First, the study used a convenience sample, and the recruitment of participants was limited to shopping malls or major commercial areas. Second, the samples have a different sociodemographic profile than the population of each city surveyed, specifically in relation to the larger presence of women and more highly educated individuals. As previous studies generally indicate a direct relationship between schooling and health awareness (31), there might be an overestimation of the positive findings (and an underestimation of the negative ones), meaning that

the scenario in the general population of each city is probably worse than the one shown here. These limitations also imply that the findings from this study cannot be extrapolated to the entire population of each studied city (or country). Differences in the demographic characteristics of the participants in each country were also found, rendering direct comparisons between countries impossible. A study with a higher prevalence of highly educated individuals or younger individuals also tends to have a higher proportion of positive findings. Lastly, even though the questionnaire was pilot tested in each of the study sites, this study did not rely on a validated questionnaire.

In conclusion, the findings from this study indicate that additional effort is required to increase consumers’ knowledge, mainly about the existence of a maximum limit for salt or sodium intake, and to improve their capacity to accurately monitor and reduce their personal salt consumption. In relation to food labeling, the results show that traditional labeling (information panel showing sodium content) is challenging to interpret and often is not used to guide consumers’ decisions. Fewer than half of participants said they read nutritional information on food labels or paid attention to special claims on the package, pinpointing the need to improve awareness of these important information strategies. The high percentage of consumers desir-

ing information on food labels indicating the amount of salt in the item or a clear warning label on the package of foods high in salt indicates that it might be necessary to develop a clearer labeling format. In the meantime, the high numbers of consumers aware of the need to reduce salt or sodium intake and of consumers trying to minimize their current salt intake are very positive findings and should be reinforced. Next phases include extending the survey to other countries in the Americas (e.g., Bolivia and Brazil) and replicating it in the same countries in order to explore the impact of PAHO’s work on reducing salt intake.

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APPENDIX 1. Survey on knowledge, attitude and behavior toward dietary salt and health



QUESTIONNAIRE

Nº:	Date:	Interviewer:			
Age					
Sex		female		male	
Children under 16 and living at home	yes	no	no answer		
Highest education level	none	primary	secondary	higher	no answer

Attitude statements

I try to eat a healthy diet	agree	disagree	don't know	no answer
Eating a diet high in salt can cause serious health problems	agree	disagree	don't know	no answer
I try to minimize the amount of fat I eat	agree	disagree	don't know	no answer
My health is generally good	agree	disagree	don't know	no answer
There is too much pressure to eat healthily these days	agree	disagree	don't know	no answer
I try to minimize the amount of salt I consume	agree	disagree	don't know	no answer
I know in general how much salt food contains	agree	disagree	don't know	no answer
There is sufficient nutritional information on labels of food and drinks	agree	disagree	don't know	no answer

1. How often do you add salt to food at the table?

never	rarely	sometimes	often	always	don't know
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2. In the food you eat at home salt is added in cooking

never	rarely	sometimes	often	always	don't know
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3. How much salt do you think you consume?

too much	right amount	too little	don't know	no answer
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**4. What sort of health problem do you think can be caused by a high salt diet?
(do not read aloud + tick all that apply)**

a) high blood pressure	b) osteoporosis
c) stomach cancer	d) kidney stones
e) heart attack/heart failure	f) stroke
g) asthma	h) other (specify):
i) none	
j) don't know	k) no answer

5. Do you suffer from or have you suffered from: ?

High blood pressure	yes	no	don't know	no answer
Heart attack	yes	no	don't know	no answer
Stroke	yes	no	don't know	no answer
Kidney stones	yes	no	don't know	no answer
Asthma	yes	no	don't know	no answer
Osteoporosis	yes	no	don't know	no answer
Stomach cancer	yes	no	don't know	no answer

6. Limiting the amount of salt/sodium I eat is important to me.

not at all	somewhat	very	don't know	no answer
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7. What, if anything, do you do to control your salt or sodium intake?

8. Do you know if there is a recommended amount for salt/sodium to be eaten per person per day?

yes	no	don't know	no answer
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9. If yes, please indicate the amount?

10. Do you know the difference between salt and sodium?

yes	no	don't know	no answer
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11. If yes, please indicate the difference?

12. Do you pay attention to indications on packages like "no added salt", "low in salt", "light", "free of trans fat"?

always	often	sometimes	rarely	never	don't know	no answer
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13. How often do you read nutrition labels on food packages?

always	often	sometimes	rarely	never	don't know	no answer
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14. What do you prefer on nutrition labels on food packages?

salt	sodium	salt and sodium	don't know	no answer
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15. Why?

16. Would you like labelling of food indicating high/medium/low levels of salt or sodium?

yes	no	don't know	no answer
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17. Would you like to see a clear warning label on the package if foods are high in salt?

yes	no	don't know	no answer
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18. Would you like labelling of food indicating the amount of salt or sodium in grams or milligrams?

yes	no	don't know	no answer
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19. Would you like labelling of food indicating salt or sodium as a percentage of the amount recommended to be eaten per person per day?

yes	no	don't know	no answer
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20. Do you prefer labelling of food indicating salt or sodium per portion or the total amount per package?

per portion	per 100 gr	total per package	don't know	no answer
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21. Comments:

RESUMEN

Actitudes, conocimientos y comportamiento de los consumidores en relación con el consumo de sal en países centinelas de la Región de las Américas

Objetivo. Describir las actitudes, los conocimientos y el comportamiento individuales con respecto al consumo de sal, sus fuentes alimentarias, y las prácticas actuales de etiquetado de alimentos en relación con su contenido en sal y sodio en cinco países centinelas de la Región de las Américas.

Métodos. De septiembre del 2010 a febrero del 2011, se obtuvo una muestra de conveniencia de 1 992 adultos (de 18 años de edad o mayores) de Argentina, Canadá, Chile, Costa Rica y Ecuador (aproximadamente 400 de cada país). Se llevó a cabo la recopilación de datos en centros o áreas comerciales importantes mediante un cuestionario de 33 preguntas. Se presentan los cálculos descriptivos correspondientes a la muestra total y estratificados por países y según las características sociodemográficas de la población estudiada.

Resultados. Casi 90% de los participantes asociaron la ingesta excesiva de sal con la aparición de trastornos de salud, más de 60% señalaron que estaban tratando de reducir su ingesta de sal actual, y más de 30% creían que la reducción de la sal alimentaria era de gran importancia. Solo 26% de los participantes manifestaron que conocían la existencia de un valor máximo recomendado de ingesta de sal o sodio, y 47% de estos afirmaron que conocían el contenido de sal de los productos alimenticios. Más de 80% de los participantes dijeron que les gustaría que el etiquetado de los alimentos indicara si los niveles de sal o sodio eran altos, medios o bajos, y desearían que en los paquetes de los alimentos con alto contenido de sal apareciera una etiqueta de advertencia clara.

Conclusiones. Se requieren nuevas iniciativas para incrementar los conocimientos de los consumidores acerca de la existencia de un límite máximo de ingesta y mejorar su capacidad para vigilar estrictamente y reducir el consumo de sal.

Palabras clave

Sodio; actitud; conocimiento; conducta; organizaciones del consumidor; Américas.