

# **Assessment of Consumer Awareness About Mercury in Fish Rhode Island - 2005**

## **Final Project Report**

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# **Assessment of Consumer Awareness About Mercury in Fish Rhode Island - 2005**

## **1. SUMMARY**

The Rhode Island Department of Health (HEALTH), in conjunction with the Rhode Island Food Dealers Association (RIFDA) and two of its members [Shaw's and Stop & Shop], conducted surveys in June and July 2005 to assess consumers' knowledge and awareness of mercury in fish issues. This study used a pre-survey and post-survey to determine if a retail-based educational campaign would be an effective tool to inform consumers about mercury in fish. A total of eight (8) stores were selected to participate in this study: Stop & Shop locations in Kingston, Providence, Lincoln, and Coventry; and Shaw's locations in Barrington, East Providence, Middletown, and Warwick [Lakewood].

The pre-survey/post-survey consisted of eleven (11) questions and targeted consumers at local grocery stores as they prepared to exit the store. A total of 1079 respondents were surveyed during the study [523 pre-survey and 556 post-survey]. The survey was designed to gather information regarding consumer knowledge, attitudes and behavioral implications [i.e., responses to knowledge and attitudes] about mercury in fish.

Because overall awareness about many mercury in fish issues was already high [pre-survey], little positive change was observed between the pre-survey and post-survey. The only exception was a question designed to determine if the survey participants had gained any knowledge about the mercury in fish issue through brochures at the retail point of sale. This question produced a statistically significant [ $p<0.05$ ] increase in the number of respondents who identified brochures /in-store displays as a source of their information about mercury in fish. Small, but statistically significant, decreases in awareness and knowledge about mercury in fish issues, as indicated by answers to certain questions, are likely statistical anomalies rather than actual decreases.

## **2. BACKGROUND**

Methyl-mercury is a neurotoxin that bioaccumulates in fish. Fish consumption advisories primarily warn women of childbearing age and their young children that some species of fish routinely contain hazardous levels of methyl-mercury that could harm a child's developing nervous system or lead to other adverse health impacts.

In April 2004, environmental activists met with Patricia Nolan, MD, HEALTH Director, to discuss mercury contamination issues in Rhode Island and lobby for regulatory requirements to post fish consumption advisories at retail point of sale. Dr. Nolan suggested that the activists consider the petition mechanism to advance the regulation issue. In October 2004, the Environmental Council of Rhode Island (ECRI) and twenty five (25) signatories petitioned HEALTH to use its existing authority to write regulations that would require all fish retailers to post signs about the dangers of mercury in fish, particularly swordfish, shark, and albacore tuna.

### **3. PROJECT DESCRIPTION**

HEALTH and RIFDA have worked together since 2003 on a series of campaigns to increase public health awareness about mercury in fish. These prior outreach campaigns were voluntary, and no studies were conducted to assess their effectiveness. HEALTH shared the RIFDA's concerns that signs may be an ineffective method to increase awareness, and may have the unintended result of increasing consumption of other foods that are more unhealthy than fish. HEALTH was also concerned that signs might have a spillover effect on the general public and lead to a reduction in consumption of fish that is low in mercury. In addition, establishment of mandatory signage requirements could divert limited HEALTH enforcement resources from more critical needs.

HEALTH proposed a study to RIFDA and the Petitioners which would assess whether posting advisories in retail food establishments would be an effective tool to educate consumers about mercury in fish. The results of this study would be used by HEALTH to evaluate the effectiveness of the program and make informed decisions about the need for additional outreach and/or regulatory initiatives. In January 2005, the Petitioners agreed to postpone proposing any legislation, pending the outcome the study.

The study consisted of an eleven (11) question pre-survey/post-survey design to target consumers at local grocery stores as they prepared to exit the store. This survey was designed to gather information from consumers regarding:

- A. **Consumer knowledge about mercury in fish:** Questions 1, 2, 5 and 6 assessed general knowledge about the potential health benefits and risks of eating fish, focusing particularly on information that is contained in the HEALTH educational brochure entitled "Fish is Good, Mercury is Bad."
- B. **Consumer attitudes about mercury in fish:** Questions 7 and 8 focused on the respondents' level of concern about mercury in fish for themselves and their friends and family members.
- C. **Consumer response to knowledge and attitude about mercury in fish:** Questions 3, 9, 10 and 11 assessed how consumer knowledge and attitudes about mercury in fish affect behavior. Specifically, do respondents eat fish and, if so, will [or have] their fish consumption patterns change as a result of educational information about mercury in fish.
- D. **Channels of communication:** Question 4 was designed to identify the respondent's source(s) of information about mercury in fish.

The overall study design consisted of three (3) specific elements: a pre-survey [administered on 17-19 June 2005] to establish a baseline; a "Fish Week" educational program, including posting consumer advisories about mercury in fish, conducted in the eight (8) participating supermarkets during the week of 11-17 July 2005; and an identical post-survey [administered on 21-24 July 2005] to evaluate the effectiveness of the "Fish Week" educational activities.

By comparing pre- and post-survey results, the following questions could be answered:

- Did consumer knowledge about this issue increase due to "Fish Week" educational postings?
- Did respondent attitudes [as a group] about the issue change?

- Will advisories have a behavioral impact [either positive or negative] relating to this issue?

#### **4. THE PROJECT PROCESS**

The initial phase of this study included several meetings between HEALTH and RIFDA members to discuss issues related to mercury ingestion in fish and to develop a pilot program to study the effectiveness of educational signs in retail food establishments. Participants identified several obstacles and issues regarding the petition [for a regulation requiring posting] and other efforts to increase awareness, including:

- General awareness
  - ▲ Mercury is just one of many public health issues related to seafood. HEALTH's Office of Food Protection is more concerned about hazards associated with consumption of raw seafood, scromboid toxin, paralytic shellfish poisoning, etc.
  - ▲ Fish is just one of many dietary and public health issues related to pregnancy. Physicians are more concerned with folic acid, listeria in luncheon meat, alcohol and tobacco.
  - ▲ Consuming fish can benefit heart disease prevention. Heart disease is a major cause of morbidity and mortality. Efforts to reduce mercury exposures that produce a change in behavior [i.e., causing people to include less overall fish consumption in their diet] that increases heart disease risks will likely have an overall negative impact on public health.
- Resources
  - ▲ Redirecting HEALTH's Office of Food Protection to enforce signage regulations, instead of inspecting high-risk establishments, will be counter-productive to overall public health.
  - Food dealers are already required by other regulations to post all sorts of signs [e.g., signs that indicate that farm-raised salmon receive feed with additives to impart color] and the potential impact of an additional sign might be lost in the clutter.
  - Using sales figures to assess the impacts of brochures or signs is problematic. Fluctuations in sales figures may reflect other factors [e.g., price reductions or holiday seafood sales].

The next phase of the project involved development of the survey instrument. RIFDA and HEALTH developed an eleven (11) question survey (see Appendix) to be used in a pre-survey/post-survey format.

After the final format of the survey had been agreed on, HEALTH distributed the survey to participating RIFDA members in June 2005. The original objective had been to obtain 100 pre- and post-surveys from each of the participating stores. Eight (8) different stores [Stop & Shop locations in Kingston, Providence, Lincoln, and Coventry; and Shaw's locations in Barrington, East Providence, Middletown, and Warwick (Lakewood)] were selected by their respective corporate offices as survey sites. Store employees conducted face-to-face (pre-) surveys with customers on the weekend of 17-19 June 2005. "Fish Week" was held July 11-18 2005 at participating stores, and included posting consumer advisories concerning mercury in fish and

distribution of Food Market Institute's brochure in English and HEALTH's "Fish is Good – Mercury is Bad!" educational brochure in both English and Spanish. Store employees again conducted face-to-face (post-) surveys with customers on the weekend of 21-24 July 2005.

## 5. RESULTS

HEALTH's Office of Environmental Health Risk Assessment was responsible for data entry of survey information and statistical analysis of results. A total of 1079 participants completed the survey [523 responded to the pre-survey and 556 participated in the post-survey]. Table 1 presents store location and number of respondents at each location. Tables 2, 3 and 4 summarize participant response to ten (10) questions dealing with consumer knowledge, attitude and behavioral implications [i.e., responses to knowledge and attitudes] about mercury in fish issues. Table 5 includes participant response to a multi-part question which identifies the channels of communication that consumers use to obtain information about mercury in fish issues. Table 6 presents a Chi-Square analysis of the differences between the pre- and post-surveys.

### A. Consumer knowledge about mercury in fish [Table 2]

The vast majority of respondents [pre-survey: 96.2%, n=503; post-survey: 93.9%, n=522] were aware that fish is good for you. Most respondents [pre-survey: 85.7%, n=448; post-survey: 79.9%, n=444] indicated they knew about mercury in fish and had an awareness that high levels of mercury in some fish can cause health problems. . Approximately two-thirds of respondents [pre-survey: 67.3%, n=352; post-survey: 66.5%, n=370] were aware that certain fish have high levels of mercury. The majority of survey respondents [pre-survey: 74.6%, n=390; post-survey: 68.9%, n=383] were also aware that women of child-bearing age and children under age 6 should be most careful about consuming fish that contain mercury, as evidenced by a **Yes** answer to Question 6.

### B. Consumer attitudes about mercury in fish [Table 4]

Fifty-seven percent (57%) of both pre-survey [n=298] and post-survey [n=317] respondents were concerned about mercury levels in fish, while 81.1% [n=424] of pre-survey and 74.6% [n=415] of post-survey respondents thought the information was important enough to share with family and friends.

### C. Consumer response to knowledge and attitude about mercury in fish [Tables 5A & 5B]

In terms of behavioral impact, only about 16% of respondents from each group [pre-survey n=88; post-survey n=89] have talked to their health care providers about mercury in fish. Fish consumption among respondents was high, with 80.5% [n=421] of pre-survey and 77.7% [n=432] of post-survey respondents eating fish.

The remainder of the survey [Questions 10 and 11] was targeted only to respondents who consume fish. Approximately one-third of respondents to both the pre- [n=146] and post- [n=138] surveys plans to change [or has already changed] their fish-eating habits as a result of information about mercury. Pre- and post-survey responses were similar for those respondents who indicated that they would change [or have already changed] their fish consumption. About 6% would stop eating all fish; 59.6% versus 51.4% would stop

eating fish with high levels of mercury; 84-85% would limit eating fish with high levels of mercury; 12-13% would stop eating all fish caught locally in Rhode Island; and 38% versus 37% would limit eating fish caught in Rhode Island.

#### **D. Channels of communication [Table 3]**

Most respondents in both pre- and post-survey have heard about high mercury levels in fish from media sources [e.g., TV, newspapers, or magazines], with 78.2% [n=409] and 75.5% [n=420] answering affirmatively. Slightly less than 25% of each group [n=121, n=133] heard about the issue on the Internet. The greatest difference between pre- and post-survey responses was the number of people who obtained information about the issue from brochures at point-of-sale. Only 15.3% [n=80] of the pre-survey respondents indicated that they heard about mercury in fish in this manner, while the post-survey showed an increase to 24.1% [n=134] of the respondents.

#### **E. Differences between pre and post-surveys [Table 6]**

There was a statistically significant [ $p=0.0176$ ] increase in the percent of “Yes” answers to Question 4c. There were also statistically significant decreases in the percent of “Yes” answers to Questions 1 [ $p=0.0491$ ]; 2 [ $p=0.0046$ ]; 4a [ $p=0.0378$ ]; 4e [ $p=0.0110$ ]; 6 [ $p=0.0124$ ] and 8 [ $p=0.0015$ ].

A detailed analysis of possible factors contributing to these changes is presented in Section 6 below.

## **6. DISCUSSION AND ANALYSIS**

#### **A. Process evaluation:**

There are a number of factors which may have introduced some statistical bias into both the pre- and post-survey results.

- Participation from RIFDA and its members was voluntary, and the number of completed surveys varied from store to store.
- Additional efforts could have been made to improve communication with participating stores.
- Store employees weren't provided with a common training prior to conducting the surveys. It was left up to each participating store to identify the employees who would conduct the survey and provide whatever training was necessary. In addition, the employees conducting the pre-survey were not necessarily those conducting the post-survey.
- The type and extent of “Fish Week” educational activities were not uniform among stores, and there may have been some inconsistencies in the posting/information that was available at each location.
- Although the surveys were conducted at the same locations and at similar time of day/week, there was a high probability of different populations being sampled [i.e., pre-survey and post-survey participants weren't necessarily the same consumers], and

there was also a possibility of difference in the general characteristics of those being surveyed.

Differences between the pre-survey and post-survey responses weren't statistically significant for Questions 3, 4b, 4d, 5, 7, 9 10 and 11, although pre-survey scores were generally higher in raw percentages.

An increase in the percent of "Yes" answers to Question 4c was not unexpected and could be attributed to the "Fish Week" educational activities.

A statistically significant decrease in the percent of "Yes" answers to Questions 1, 2, 4a, 6 and 8 was unexpected. Participant response to these questions was unlikely to be negatively impacted by the "Fish Week" educational activities. A possible explanation may lie in some combination of the statistical bias factors identified above.

## B. Conclusions:

There was no apparent positive impact from the "Fish Week" educational intervention on most of the Knowledge, Attitude or Behavior factors being evaluated in this study. Only Communication Channels [Question 4c] indicated any statistically significant increase between pre- and post-survey participants. The design of the survey should not have resulted in any of the statistically significant decreases identified in Section 6A. Unless these trends can be validated by additional surveys, the results should be handled as statistical anomalies, and presumed to have a neutral impact as a result of the "Fish Week" educational activities.

Despite an increase in the number of consumers who gained knowledge about high levels of mercury in fish from the supermarket brochures, less than 25% of either the pre-survey or post-survey group indicated that the supermarket postings were sources of their knowledge about the issue. In addition, they did not exhibit an increase in general knowledge nor did they indicate any attitudinal or behavioral changes.

The following overall trends were noted in both the pre- and post-surveys:

- Most respondents had general knowledge about mercury in fish issues;
- Most respondents eat fish;
- Most respondents do not plan to change their attitudes or fish consumption behaviors, although in some cases this may be because the respondent did not consider himself/herself to be in a high-risk group; and
- There was a slight increase in the number of respondent who obtained their knowledge from point-of-sale brochures [Question 4c], but there was no significant change in general knowledge about mercury in fish issues [Questions 1, 2, 5, 6].
- A comparison of swordfish/shark sales between participating and non-participating stores could also be an important consideration in evaluating the effectiveness of "Fish Week" educational activities.

## **7. RECOMMENDATIONS**

Based on this pilot study, HEALTH recommends the following:

- This study provides little support for regulations requiring posting of fish advisories at retail point of sale. HEALTH should continue to work with RIFDA, environmental groups and individual retail food establishments to promote voluntary consumer education [e.g., brochures, etc]. Evaluation of these efforts can serve as the basis for determining the need of any future regulatory requirements.
- HEALTH and its community partners should continue to evaluate existing mercury educational resources, determine the best ways to distribute them to target populations and develop additional educational/outreach materials as necessary.

## **8. APPENDICES<sup>1</sup>**

Survey Questionnaire

Table 1: Survey Participation

Table 2: Participant Knowledge About Mercury in Fish

Table 3: Source of Participant Knowledge About Mercury in Fish

Table 4: Participant Attitude About Mercury in Fish

Tables 5A & 5B: Participant Response to Knowledge and Attitude About Mercury in Fish

Table 6: Statistical Significance of Differences Between the Pre- and Post-Survey Results  
[Chi Square Analysis]

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<sup>1</sup> Attached – Pages 8-14

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Hello. My name is \_\_\_\_\_ and I am conducting a survey on behalf of the RI Department of Health and the RI Food Dealers Association on seafood shopping. May I take a few moments of your time?

### Mercury in Fish Survey

Throughout this survey, the word "fish" refers to all fresh, frozen, canned, and packaged fish.

1. Are you aware that fish is good for you? ..... Yes No
2. Are you aware that high levels of mercury in some fish can cause health problems? ..... Yes No
3. Have you talked to your health care provider about mercury and fish? ..... Yes No
4. Have you heard about high mercury levels in fish from:
  - a. TV, newspapers, or magazines? ..... Yes No
  - b. The Internet? ..... Yes No
  - c. Brochures in the supermarket or fish stores?
    - i. If Yes, did you understand the brochures? ..... Yes No
    - d. Your doctor or nurse? ..... Yes No
    - e. Your family or friends? ..... Yes No
5. Are you aware that large fish, such as swordfish, shark, and albacore tuna, have high levels of mercury? ..... Yes No
6. Are you aware that pregnant or nursing women and children under age six should be most careful about eating fish that contain mercury? ..... Yes No
7. Are you concerned about mercury levels in fish? ..... Yes No
8. Do you think information about mercury in fish is important enough to share with your family and friends? ..... Yes No
9. Do you eat fish? ..... Yes No

If you answered "No" to #9:  Thank you for completing this survey.

10. Due to information about mercury in fish, do you plan to change (or have you already changed) your fish-eating habits? ..... Yes No

If you answered "No" to #10:  Thank you for completing this survey.

### 11. ANSWER ONLY IF YOU ANSWERED "YES" TO #10

If you plan to change your eating habits, do you plan to (or have you already):

- a. Stop eating all fish? ..... Yes No
- b. Stop eating all fish with high levels of mercury? ..... Yes No
- c. Limit eating fish with high levels of mercury? ..... Yes No
- d. Stop eating all fish caught locally in RI? ..... Yes No
- e. Limit eating fish caught locally in RI? ..... Yes No
- f. Start eating more fish known to have low levels of mercury? ..... Yes No

Thank you for completing this survey. For additional information about mercury in fish, see the Customer Service Desk or visit the Department of Health Website at <http://www.health.ri.gov/environment/risk/fish.php>

**TABLE 1: SURVEY PARTICIPATION**

<b>SURVEY LOCATION</b>	<b>PRE-SURVEY (June 2005)</b>		<b>POST-SURVEY (July 2005)</b>		<b>COMBINED TOTALS</b>	
	<b># SURVEYED</b>	<b>PERCENT</b>	<b># SURVEYED</b>	<b>PERCENT</b>	<b># SURVEYED</b>	<b>PERCENT</b>
Barrington Shaw's	55	10.5%	57	10.3%	112	10.4%
Coventry Stop & Shop	100	19.1%	82	14.7%	182	16.9%
East Providence Shaw's	38	7.3%	21	3.8%	59	5.5%
Kingston Stop & Shop	100	19.1%	99	17.8%	199	18.4%
Lakewood Shaw's	15	2.9%	86	15.5%	101	9.4%
Lincoln Stop & Shop	64	12.2%	69	12.4%	133	12.3%
Middletown Shaw's	51	9.8%	54	9.7%	105	9.7%
Providence Stop & Shop	100	19.1%	88	15.8%	188	17.4%
<b>TOTALS:</b>	<b>523</b>	<b>100.0%</b>	<b>556</b>	<b>100.0%</b>	<b>1079</b>	<b>100.0%</b>

**TABLE 2: PARTICIPANT KNOWLEDGE ABOUT MERCURY IN FISH**

QUESTION	PRE -SURVEY (June 2005)			POST SURVEY (July 2005)		
	YES	NO	NO ANSWER	YES	NO	NO ANSWER
<b>1. Are you aware that fish is good for you?</b>	503 [96.2%]	17 [3.3%]	3 [0.6%]	522 [93.9%]	32 [5.8%]	2 [0.4%]
<b>2. Are you aware that high levels of mercury in some fish can cause health problems?</b>	448 [85.7%]	70 [13.4%]	5 [1.0%]	444 [79.9%]	111 [20.0%]	1 [0.2%]
<b>5. Are you aware that large fish, such as swordfish, shark, and albacore tuna, have high levels of mercury?</b>	352 [67.3%]	160 [30.6%]	11 [2.1%]	370 [66.5%]	181 [32.6%]	5 [0.9%]
<b>6. Are you aware that pregnant or nursing women and children under age six should be most careful about eating fish that contain mercury?</b>	390 [74.6%]	120 [22.9%]	13 [2.5%]	383 [68.9%]	167 [30.0%]	6 [1.1%]

**TABLE 3: SOURCE OF PARTICIPANT KNOWLEDGE ABOUT MERCURY IN FISH**

QUESTION	PRE -SURVEY (June 2005)			POST SURVEY (July 2005)		
	YES	NO	NO ANSWER	YES	NO	NO ANSWER
<b>4. Have you heard about high mercury levels in fish from:</b>						
a. TV, newspapers, or magazines?	409 [78.2%]	89 [17.0%]	25 [4.8%]	420 [75.5%]	126 [22.7%]	10 [1.8%]
b. The Internet?	121 [23.2%]	292 [55.8%]	110 [21.0%]	133 [23.9%]	375 [67.4%]	48 [8.6%]
c. Brochures in the supermarket or fish stores?	80 [15.3%]	323 [61.8%]	120 [22.9%]	134 [24.1%]	370 [66.5%]	52 [9.4%]
<b>AN ADDITIONAL QUESTION WAS ASKED ONLY OF THOSE WHO RESPONDED <u>YES</u> TO QUESTION 3c</b>						
If Yes, did you understand the brochures?	65 [68.4%]	20 [21.1%]	10 [10.5%]	100 [75.2%]	25 [18.8%]	8 [6.0%]
d. Your doctor or nurse?	98 [18.7%]	313 [59.8%]	112 [21.4%]	101 [18.2%]	402 [72.3%]	53 [9.5%]
e. Your family or friends?	217 [41.5%]	200 [38.2%]	106 [20.3%]	224 [40.3%]	289 [52.0%]	43 [7.7%]

**TABLE 4: PARTICIPANT ATTITUDE ABOUT MERCURY IN FISH**

QUESTION	PRE -SURVEY (June 2005)			POST SURVEY (July 2005)		
	YES	NO	NO ANSWER	YES	NO	NO ANSWER
7. Are you concerned about mercury levels in fish?	298 [57.0%]	201 [38.4%]	24 [4.6%]	317 [57.0%]	226 [40.6%]	13 [2.3%]
8. Do you think information about mercury in fish is important enough to share with your family and friends	424 [81.1%]	77 [14.7%]	22 [4.2%]	415 [74.6%]	125 [22.5%]	16 [2.9%]

**TABLE 5A: PARTICIPANT RESPONSE TO KNOWLEDGE AND ATTITUDE ABOUT MERCURY IN FISH**

QUESTION	PRE -SURVEY (June 2005)			POST SURVEY (July 2005)		
	YES	NO	NO ANSWER	YES	NO	NO ANSWER
3. Have you talked to your health care provider about mercury and fish?	88 [16.8%]	427 [81.6%]	8 [1.5%]	89 [16.0%]	462 [83.1%]	5 [0.9%]
9. Do you eat fish?	421 [80.5%]	85 [16.3%]	17 [3.3%]	432 [77.7%]	104 [18.7%]	20 [3.6%]
<b>QUESTION 10 WAS ASKED ONLY OF THOSE WHO RESPONDED <u>YES</u> TO QUESTION 9</b>						
10. Due to information about mercury in fish, do you plan to change (or have you already changed) your fish-eating habits?	146 [34.7%]	254 [60.3%]	21 [5.0%]	138 [31.7%]	272 [62.5%]	25 [5.7%]

**TABLE 5B: PARTICIPANT RESPONSE TO KNOWLEDGE  
AND ATTITUDE ABOUT MERCURY IN FISH**

QUESTION	PRE -SURVEY (June 2005)			POST SURVEY (July 2005)		
	YES	NO	NO ANSWER	YES	NO	NO ANSWER
<b>QUESTION 11 WAS ASKED ONLY OF THOSE WHO RESPONDED YES TO QUESTION 10</b>						
<b>11. If you plan to change your eating habits, do you plan to (or have you already):</b>						
a. Stop eating all fish?	9 [6.2%]	133 [91.1%]	4 [2.7%]	9 [6.5%]	120 [86.3%]	10 [7.2%]
b. Stop eating all fish with high levels of mercury?	87 [59.6%]	56 [38.4%]	3 [2.1%]	71 [51.4%]	52 [37.7%]	15 [10.9%]
c. Limit eating fish with high levels of mercury?	122 [83.6%]	14 [9.6%]	10 [6.8%]	117 [84.8%]	10 [7.2%]	11 [8.0%]
d. Stop eating all fish caught locally in RI?	17 [11.6%]	119 [81.5%]	10 [6.8%]	18 [13.0%]	104 [75.4%]	16 [11.6%]
e. Limit eating fish caught locally in RI?	56 [38.4%]	81 [55.5%]	9 [6.2%]	50 [36.2%]	71 [51.4%]	17 [12.3%]
f. Start eating more fish known to have low levels of mercury?	118 [80.8%]	22 [15.1%]	6 [4.1%]	111 [80.4%]	17 [12.3%]	10 [7.2%]

**TABLE 6:STATISTICAL SIGNIFICANCE OF DIFFERENCES BETWEEN THE PRE- AND POST-SURVEY RESULTS [CHI-SQUARE ANALYSIS]**

Question #	Pre-Survey % "Yes"	Post-Survey % "Yes"	Change	Chi Square	p-value
1	96.2	93.9	-	3.8716	<b>0.0491</b>
2	85.7	79.9	-	8.0389	<b>0.0046</b>
3	16.8	16.0	-	0.1680	0.6819
4a	78.2	75.5	-	4.3156	<b>0.0378</b>
4b	23.2	23.9	-	1.1079	0.2925
4c	15.3	24.1	+	5.6367	<b>0.0176</b>
4ci	68.4	75.2	+	0.3743	0.5407
4d	18.7	18.2	-	1.8822	0.1701
4e	41.5	40.3	-	6.4687	<b>0.0110</b>
5	67.3	66.5	-	0.3116	0.5767
6	74.6	68.9	-	6.2597	<b>0.0124</b>
7	57.0	57.0	-	0.1931	0.6604
8	81.1	74.6	-	10.0555	<b>0.0015</b>
9	80.5	77.7	-	1.1892	0.2755
10	34.7	31.7	-	0.7180	0.3968
11a	6.2	6.5	+	0.0445	0.8330
11b	59.6	51.4	-	0.2661	0.6059
11c	83.6	84.8	+	0.4638	0.4958
11d	11.6	13.0	+	0.2787	0.5976
11e	38.4	36.2	+	0.0053	0.9420
11f	80.8	80.4	+	0.3183	0.5726