

A comparison of Handwashing Frequency Between a Restaurant and a Shopping Mall

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Abstract

Background Information

It is very important for a person to wash their hands all the time not just before a meal to prevent disease transmission. Several diseases can be obtained in the environment of a public restroom.

Methods

Two restrooms were observed one in a restaurant and the other in a shopping mall. 36 subjects were observed in each restroom.

Analyses

95% confidence intervals of proportions and two-independent-samples test were used to determine if the difference between the two groups were statistically significant.

Results

The results and the analyses show that the differences are statistically significant. It appears a greater proportion of people washed their hands in the restaurant then in the mall.

Discussion

It appears that more education needs to be distributed to the general population about the importance of hand washing every time the restroom is used.

Background Information

Handwashing is a very important activity for the prevention of disease. Bathrooms and the rest of the environment have a large number of pathogens. These pathogens include respiratory ailments such as colds and influenza and also digestive system pathogens such as Salmonella, Shigellosis, Cryptosporidium, E. coli and many others. Since many of these organisms affect

the digestive system a public restroom is a particularly dangerous place when it comes to coming in contact with these pathogens.

People are quite vigilant about washing their hands before they eat. Therefore a person in a restaurant may be more likely to wash their hands than somebody who is a shopping mall. However, from a public and personal health standpoint it is important for people to wash their hands after using the bathroom under any circumstances. This experiment will test the hypothesis that a greater proportion of people will wash their hands after using the bathroom in a restaurant versus the shopping mall.

Methods

Three observers were used in the study. Each observer observed the hand washing frequency of twelve people in two shifts where each shift observed six people. This gives a total sample of 36 people. This was done to avoid having the subjects get suspicious that their behavior was being observed. Busy restrooms were also chosen. One of the observation areas was in a very busy restaurant and another was in a busy shopping mall. People that just went into the restroom were excluded and children who were accompanied by an adult were also excluded.

Analyses

Descriptive statistics in this study include the proportion of subjects that washed their hands and the two restrooms in a restaurant and a busy shopping mall. This is followed by calculating the proportions of both samples and performing a 95% confidence interval to determine if there is a significant difference between the two samples. Inferences can then be drawn from these results.

Results

Table 1: The number of people who did and did not wash their hands in the restaurant and shopping mall.

	Washed Hands	Did not wash hands	Total
Shopping Mall	25	11	36
Restaurant	32	04	36
Total	57	15	72

Table 2: Statistical Analyses on the above data including the proportions and the confidence interval for the differences between the hand washing frequency at the restaurant and shopping mall.

Proportion of people who washed their hands at the restaurant	.89
Proportion of people who washed their hands at the shopping mall	.69
Difference between the proportion at restaurant and shopping mall	.20
Total Proportion of people who washed their hands	.79
95% Confidence Interval of the difference between the two proportions	(.02, .38)
Two-independent-samples test Significance between groups p-value	.01

Table 1 shows the number of people who washed their hands at both the restaurant and the shopping mall. Table 2 shows the statistical analyses including the proportion of people who washed their hands at each location and the 95% confidence interval between the two means. It is obvious that the proportion between the two groups are different with the restaurant group having the higher value. Two test were run to explore the difference between the two groups. The 95% confidence interval of proportions does not cross zero, therefore the difference between the two proportions are significant at a .05 level. A two independent-samples test was also run and a significance was shown at the .01 level.

Discussion

It was shown by the results of the experiment that people are more vigilant about washing their hands after using the restroom in a restaurant than at a shopping mall to a significance of .05 or better and a two-independent-samples test shows the difference is at a significance of .01. This indicates that people are more likely to wash their hands if they are going to consume a meal in a short time after using the bathroom. These results are fairly significant. This shows that perhaps the population in general doesn't realize the importance of hand washing to prevent disease and disease transmission every time the bathroom is used not just before eating. However, there are several biases that could affect the results.

One of the problems with this experiment was the fact that the restrooms were busy. This fact enabled data collection that was rapid and less conspicuous but it also lead to people that were in a hurry to get out of the way of the next person. This could lead to a lower rate of hand washing than would normally be observed. Another potential bias is the fact that demographic factors and age were not taken into consideration. The difference in demographics could lead to

the difference in hand washing rates rather than the location. Another bias is the fact that the samples are relatively small and limited. A larger sample would lead to a more dependable result. The other problem with the experiment is the exclusion of women. A sample including women may cause the results to be different.