http://healthyhandsusa.com/studies/study_absenteeism_2000_intro.htm

Effect of Hand Sanitizer Use on Elementary School Absenteeism

Introduction

Absenteeism due to illness is a major problem in both public and private educational institutions, especially at the elementary level. The spread of communicable diseases is responsible for more than 164 million lost school days annually among Kindergarten through Twelfth Grade public school students alone.

Absenteeism caused by illness contributes significantly to the costs of lost public funding, school administrative expenses, health care, and parental leave. More fundamentally, it disrupts the students' learning process and development. The Carnegie Foundation for Education stated that 83% of teachers feel that absenteeism is the main problem they face in their school. The major contributor to absenteeism at the elementary school level is illness caused by the spread of germs.

Hands are the primary mode of transmission of many infectious diseases, particularly among school-age children. According to the U.S. Centers for Disease Control and Prevention, simple handwashing is the single most important method of preventing the spread of infectious diseases. However in schools, close contact and insufficient handwashing contribute to the spread of germs that cause illness. Teaching children appropriate hand hygiene can potentially result in reducing the spread of infection and the resulting lost learning days. Although handwashing is an excellent method for providing hand hygiene and reducing risk of cross infection through hand contact, there are classroom situations where it is impossible or inappropriate. In these situations, an alcohol-based, gel hand sanitizer provides a hand hygiene alternate that is quick, easy, and effective.

GOJO Industries, Inc., a world leader in professional skin care, has worked with school systems across the country in an effort to reduce the amount of absenteeism due to illnesses by improving hand hygiene. The objective of this particular study was to determine the effectiveness of using an alcohol-based sanitizer (PURELL Instant Hand Sanitizer) in the classroom to decrease the illness-related absentee rate for students.

Case Study Methods and Protocol

The school districts used in this case study were selected to provide varying geographical locations (Delaware, Ohio, Tennessee, and California) and demographics (city, suburban, and rural). Within each school district, schools were paired based on similarities such as student population and geographical location, and assigned as either product or control schools. When only one school was used, adjacent grades were paired so that the school served as its own control. Control group schools differed from the schools in the product group in that they did not use the hand sanitizer. The control groups were not instructed to wash hands more often than normal to provide the same number of hand hygiene incidences as the treatment groups. Therefore, the only comparison between the groups was the availability/use of hand sanitizer.

For this case study, GOJO provided the test product, PURELL with Aloe, to the schools in the product group. Product and dispensers were installed by or supervised by GOJO personnel, who also provided training and instruction to the teachers and administrative staff involved in the study. Both 800 mL dispensers, with the 800 mL refill, and 12 oz pump bottles with wall brackets were placed in the classroom. The dispensers were installed next to the door in every classroom for easy access when entering and leaving the room. The 12 oz bottles were mounted in various locations around the classroom for ease of use, and generally placed on the teacher's desk as well. The total amount of product used in each classroom was tracked and documented.

Students were asked to wash their hands as they do everyday, but also use an alcohol-based instant hand sanitizer at certain times during the day, such as before and after lunch, after recesses and after using the restroom. It was very important that the teachers made sure that the students used an alcohol-based instant hand sanitizer consistently. GOJO personnel visited the product schools at least twice during the academic year to reinforce the importance of using hand sanitizer, as well as to collect feedback from the teachers and staff concerning any issues regarding the study.

Students were able to withdraw from the study for medical or personal reasons. Approximately 0.8% (25 out of 3080) of the students did not participate or complete the study. These students were removed from the database containing the relevant absentee data. Absenteeism records were kept by school personnel who identified the reason for the absence. The schools provided the study with the records on absenteeism due to illness. For this study, absenteeism was defined as the aggregate number of non-attending school days due to illness, with illness defined as colds, flu, and gastrointestinal symptoms. All other absenteeism, such as doctors' appointments, family vacations, broken legs, etc., was excluded.

GOJO received the appropriate absentee data from the schools with no identification to link back to individual students. Absentee record forms were designed by GOJO, and were collected at regular intervals for analysis. One school system was found not to be following the protocol in recording their absenteeism rates. Their data were found to be invalid, and therefore, dropped from the study.

Two types of statistical analyses were performed on the absenteeism data. The first was a simple determination of the percentage decrease in absenteeism. After normalizing the total days absent for the product and control groups to the control group population size, the equation:

$$\% \text{ Reduction in absenteeism} = \{(\text{Total Days Absent Control} - \text{Total Days Absent Product}) / \text{Total days Absent Control}\} \times 100$$

was used to give the percent reduction of absenteeism in the product schools as compared to the control schools. The second type of analysis was conducted by an independent statistician. Since the data were uniformly distributed and nominal, a non-parametric statistical analysis, a Chi-square 2´2 design, was employed to determine statistical significance of the data.

This case study involved over 6,000 students from four states, five individual school districts and 19 individual schools. Students from kindergarten through sixth grade were enrolled in the study. Table 1 summarizes the demography of the students.

Table 1

School District	Number of Students	Grades	Number of Students in PURELL Group	Number of Students in Control Group
Cuyahoga Falls, Ohio	2,576	K-5	1,440	1,136
Hudson, Ohio	818	2 and 3	266	552
Wilmington, Delaware	223	3 and 4	110	113
Athens, Tennessee	1,272	K-6	680	592
Irvine, California	1,191	K-5	579	612
Overall	6,080	K-6	3,075	3,005

Results and Discussion

The results of absenteeism were evaluated for individual schools as well as cumulatively. Individual and overall data were provided to an independent expert for statistical analysis. Across all schools, the overall reduction in absenteeism due to illness was 19.8% (Table 2) for students using an alcohol-based instant hand sanitizer as compared to the control. This value is highly statistically significant ($p<0.0001$).

Table 2		
School District	**Percent Difference - Over Control**	**Statistical Significance**
Total	19.76%	Yes
Cuyahoga Falls, Ohio	32.96	Yes
Hudson, Ohio	11.49%	Yes
Wilmington, Delaware	7.87%	No
Athens, Tennessee	19.07%	Yes
Irvine, California	-3.75%	No

When data for the individual schools were analyzed, a statistical difference in absenteeism for the PURELL® group was found for three out of five schools. A school in Irvine, California showed more absenteeism (-3.75%) in the PURELL school than in the control. However, this difference was not statistically significant. On the other hand, a school in Wilmington, Delaware showed a 7.87% difference in absenteeism for the alcohol-based instant hand sanitizer group over the control but this result was not statistically significant either.

This case study has demonstrated that elementary school absenteeism due to illness is significantly lower when an instant hand sanitizer is available and used in the classroom. While this was not a formalized clinical study with precisely controlled variables, it points out that hand hygiene is an important parameter for overall health in a school setting. More rigorous and controlled studies are warranted to determine the causality of illnesses in elementary schools.

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