IMPORTANCE OF HAND WASHING

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INTRODUCTION & PURPOSE

The main purpose of this service learning project was to encourage UHD students to apply the knowledge learned in the classroom and benefit the community. Our project was a collaboration between Microbiology and Urban Education students to get elementary students excited and engaged in science. The project was to understand the importance of hand washing. There are many microbial factors that can lead to the transmission of bacteria, one common way is through the touch of our hands. Though it is not possible to completely cleanse the hands with just tap water and scrubbing, a person may use hand sanitizer or antibacterial/regular soaps to effectively boost the chances of removing unwanted bacteria and other microbes. We tested the idea if hands are semi-clean when washed with only water then applying soap or hand sanitizer will increase the effectiveness in the removal of bacteria. We tested water only, hand sanitizer, foam soap with water, and/or regular liquid soap with water. The goal was to learn which treatment is most effective at the 20 second hand washing.

BACKGROUND

A person may wash his/her hands before and after eating a meal or after using the restroom because of sanitary reasons, but the question is are all bacteria removed with just hand washing? Or how long does it take for the human hand to come in contact with bacteria again? Bacteria can be found anywhere, whether it is under your bed or on the tip of your nose. Therefore, recontamination of the hands can occur in a blink of an eye. Cohabitation has always existed between humans and microbes. Various studies have indicated that humans and microbes have long established a symbiotic relationship with one another, since humans and microbes benefit from each other. However, not all microbes are humans’ best friends. The human skin is covered with an average of 10 million bacteria per square centimeter of the skin, and the number varies on different parts of the body. Microbes can be found among the normal microflora of the skin. These bacteria live on the skin while functioning as a barrier against other harmful microbes. However, if the skin is broken or injured the risk of infection increases, there are also many other ways of infection or the spreading of germs, for example if hygiene is poor.


REFERENCES


No treatments utilized in the experiment did not effectively removed all bacteria

MATERIALS

- A bottle of hand sanitizer
- A bottle of foam soap
- A bottle of regular liquid soap
- Tap water
- Sterilized water
- 20 sterilized swabs
- 20 Petri dishes (baw agar)
- Incubator
- Fridge
- Tape (to seal Petri dishes)
- Black Sharpie

RESULTS

A total of 13 students (control group) have conducted an experiment to determine which method is the most effective in the removal of bacteria. The experiment started out with the control group being swabbed down (right hand) onto a petri dish that were then separated into 4 different groups, afterward, each with different cleansers to test. Group 1-4 will consist of 3 students and the last group will have 4 students (each group will receive 1 Petri dish per experiment).

Group 1 (3 students) – Tap Water

- Label bottom of Petri dish – “Group 1 – Tap Water.”
- Add date and initial each student's name.
- Wash hands with tap water for 20 sec. Allow hands to air dry.
- Take a sterilized cotton swab and dip it into sterilized water 1 time.
- Swab each students’ right hand continuously.
- Take cotton swab, used on all 13 students, and streak the whole Petri dish.
- Discard swab in trash can and seal the Petri dish with tape.

Group 2 (3 students) – Hand Sanitizer

- Label bottom of the Petri dish – “Group 2 – Hand Sanitizer.”
- Add date and initial each student's name.
- Squirt a pea size amount of hand sanitizer onto the palm, rub all over hands. Allow hands to air dry.
- Take a sterilized cotton swab and dip it into sterilized water 1 time.
- Swab each students’ right hand continuously.
- Take cotton swab, used on all 13 students, and streak the whole Petri dish.
- Discard swab in trash can and seal the Petri dish with tape.

Group 3 (3 students) – Regular Soap and Tap Water

- Label bottom of Petri dish “Group 3 – R.S. and H.O.”
- Add date and initial each student's name.
- Apply regular soap onto each student’s hand (pea size).
- Rub hands together for at least 20 seconds, rinse with tap water and allow hands to air dry.
- Take a sterilized cotton swab and dip it into sterilized water 1 time.
- Swab each students’ right hand continuously.
- Take cotton swab, used on all 13 students, and streak the whole Petri dish.
- Discard swab in trash can and seal the Petri dish with tape.

Group 4 (4 students) – Foam Soap and Tap Water

- Label bottom of Petri dish “Group 4 – F.S. and H.O.”
- Add date and initial each student's name.
- Apply foam soap onto each student's hand (pea size).
- Rub hands together for at least 20 seconds, rinse with tap water and allow hands to air dry.
- Take a sterilized cotton swab and dip it into sterilized water 1 time.
- Swab each students’ right hand continuously.
- Take cotton swab, used on all 13 students, and streak the whole Petri dish.
- Discard swab in trash can and seal the Petri dish with tape.

CONCLUSIONS

Based on the results obtained,

- No treatments utilized in the experiment did not effectively removed all bacteria
- Regular soap worked better than the other treatments
- Proper hand washing is required to remove more microbes.
- Therefore, hands should be washed frequently.

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