



Major Article

An observational study of handwashing compliance in a child care facility



Jeffrey Clark BS^a, Jennifer K. Henk PhD^{b,*}, Philip G. Crandall PhD^a,
Mardel A. Crandall MS^b, Corliss A. O'Bryan PhD^a

^a Department of Food Science, University of Arkansas, Fayetteville, AR

^b Human Environmental Sciences, University of Arkansas, Fayetteville, AR

Key Words:

Handwashing
Early childhood centers
Observational study

Background: Handwashing (HW) compliance, although an effective means of limiting childhood illness, remains low among personnel in early childhood centers (ECCs). Our study determined HW compliance and efficacy of ECC personnel.

Methods: Surveillance cameras were used to determine HW opportunities, compliance, occurrences, and effectiveness based on child-care oriented criteria.

Results: We observed 349 HW triggering events, with 14 events per hour; a median of 2 personnel (caregivers, paraprofessional aides, or parents) were present at any given time period. Compliance was 30% (caregivers), 11% (paraprofessional aides), and 4% (parents), with an overall compliance of 22%. Between-room and between-age groups of children being cared for and compliance of caregivers and paraprofessional aides were not found to be significantly different ($P < .05$). For all personnel between the 10 different rooms, the median compliance was 20.2% (95% confidence interval, 8%–35%). Only 7% of personnel taking care of 2- to 3-year-old children washed their hands, the lowest compliance per age group. Of all steps in HW, paper towel usage had the highest compliance, with a 97% adherence, whereas turning off the faucet with a paper towel was the lowest at 17%.

Conclusions: Methods and strategies need to be developed to increase compliance. Current technology provides an effective means of gathering data for determining HW compliance in ECCs.

© 2016 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Out-of-home child care services play an important role in ensuring the well-being of >32 million children annually across the United States.¹ Caregivers of these children are responsible for providing care and education to this younger population in the absence of their parents or guardians. Keeping children healthy is a huge responsibility made even more difficult because children <5 years old have only partially developed immune systems, increasing their susceptibility to communicable diseases.² Bacterial infections, such as those caused by methicillin-resistant *Staphylococcus aureus*, are sometimes acquired by children through community child care settings.³ The risk of infection is 2–3 times greater for children cared for at an early childhood center (ECC) than those cared for only in a home,⁴ with respiratory and gastrointestinal infections posing the

highest risks.⁵ A key component in reducing the risks to this vulnerable population involves minimizing microbial cross-contamination through proper handwashing (HW) among child care professionals and teachers. Proper HW is crucial to removing the causative organisms responsible for the spread of infections.⁶

Children, especially those ≤5 years old, are highly susceptible to rotavirus, a diarrheal disease commonly transmitted in child care facilities because of poor hygiene.⁷ Annual costs, including medical treatment and work missed by parents for child care, have been estimated at \$1 billion.⁷ Several studies and interventions have shown the positive effects of increasing HW compliance in ECCs, including alleviating the burdens of childhood illness.^{8–11} The cost of a successful HW intervention has been estimated to be a mere 1% of the cost of infection treatment.¹² In a review investigating 9 HW interventions, the authors determined that proper HW education in ECCs and school settings has the potential to prevent or reduce diarrhea cases by approximately one-third.¹³ Soto et al⁸ conducted HW education in ECCs and observed a 72% decrease in cases of diarrhea and a 54% decrease in cases of colds among the children. Researchers in Georgia implemented HW interventions in 2 ECCs,

* Address correspondence to Jennifer K. Henk, PhD, AFLS–Human Environmental Sciences, University of Arkansas, HMGH 201, Fayetteville, AR 72701.

E-mail address: jhenk@uark.edu (J.K. Henk).

Funding/support: J.C. is supported by a Walton Distinguished Doctoral Fellowship.

Conflicts of interest: None to report.

with 2 others serving as controls.¹¹ After 35 weeks, the diarrhea rates of the control group were double that of the intervention group. A review encompassing infection interventions in ECCs highlighted 6 studies that included HW training as leading to decreases in the rates of upper respiratory infections and diarrhea,⁹ and one in particular saw a 17% drop in upper respiratory infections.¹⁴ The benefits of HW extend to the adults as well, especially given the ability for pathogens, such as respiratory syncytial virus, to spread from infants to child care personnel.¹⁵

The Centers for Disease Control and Prevention (CDC) recommend that all volunteers, teachers, and children within the ECCs comply with HW guidelines. The National Association for Education of Young Children also requires that accredited programs stipulate that “children and adults wash their hands on arrival (in their room) for the day” in addition to other key points in the schedule. This is why many programs, including the program where we made observations extend identical HW requirements to parents. It is postulated that because parents touch potentially contaminated surfaces and sometimes interact with children within the care environment, they too may carry bacteria to children. Such a requirement also serves an educational purpose. Standard 2.4.3.2 of the CDC regulations recommends that the centers serve as an educational hub for parenting information, including the importance of HW.

Despite the various benefits, several studies have shown low HW compliance in the child care setting.^{16–18} Out of 572 observed instances in which food service workers at an ECC should have washed their hands, only 200 HWs occurred, a rate slightly <35%.¹⁷ Zomer et al¹⁶ observed a 29% compliance rate for caregivers before eating, a 25% compliance rate after touching bodily fluids, and an overall compliance rate of 42% for >2,000 HW opportunities. A survey given to parents whose children attended a child care center discovered only one-third of the respondents regularly washed their hands after wiping their child's nose.¹⁸

To our knowledge, to date, no study has been conducted using cameras as a means of determining HW compliance at an ECC, despite the advantages this form of data collection offers. Research on HW conducted by Judah et al¹⁹ suggests observations minimizing researcher-subject contact aid in developing intervention strategies. Furthermore, it has been shown that human monitoring alone can contribute to altered behaviors and outcome.^{20,21} Video observations have been used in a variety of set-

tings, including hospitals,^{22,23} a veterinary clinic,²⁴ and an elementary school,²⁵ to determine HW compliance, frequency, and efficacy based on adherence to guidelines. Shah et al²² measured the quality of HW events as defined by the World Health Organization (WHO) using motion-sensing cameras placed directly over the HW area in a neonatal intensive care unit. Over 1 week they were able to capture >1,000 handwashes from doctors, nurses, and parents. Despite the fact that all persons who entered the neonatal intensive care unit washed their hands at least once, 14.5% of all handwashes were considered unacceptable (omitted at least 3 of the 6 WHO steps deemed important and when washing time failed to be >20 seconds), with the unacceptability rate being >34% for parents.

The purpose of our study was to collect baseline data using video observations to determine the quality and frequency of HW practices in an ECC in the Northwest Arkansas region caring for infants and children up to 5 years of age.

MATERIALS AND METHODS

To properly determine the number of HW opportunities and to assess the quality of HW occurrences, wide-range, robotic surveillance cameras (ClearVIEW HD-19; Vaddio, Minnetonka, MN) were used. Two cameras were placed in each of the 10 classrooms in the early childhood facility. The cameras, secured to the walls and connected to the facility's video capture system, allowed for clear views of the sinks used for adult HW. The 2 cameras were placed on opposite sides of the room and were situated approximately 2 m above the ground on shelving or cabinets and were used simultaneously to assess behavior. Both cameras captured recordings that were then automatically displayed side by side when viewed for researcher's coding purposes. In the event that a caregiver moved from one side of the room to the other, the use of 2 cameras made their transition seamless; the opposite camera picked up the behavior right when personnel exited the frame of view from the initial camera. Key room features captured by the cameras included 1 handwashing sink per room located at the entrance to each room and a sink located proximal to child feeding areas. There were 4 rooms responsible for care of infants in the age range of 2–22 months that were equipped with an additional handwashing sink adjacent to a diaper changing station (Fig 1). The cameras were able to film most of the space of the room, and handwashing opportunities were assessed based only on visible footage.

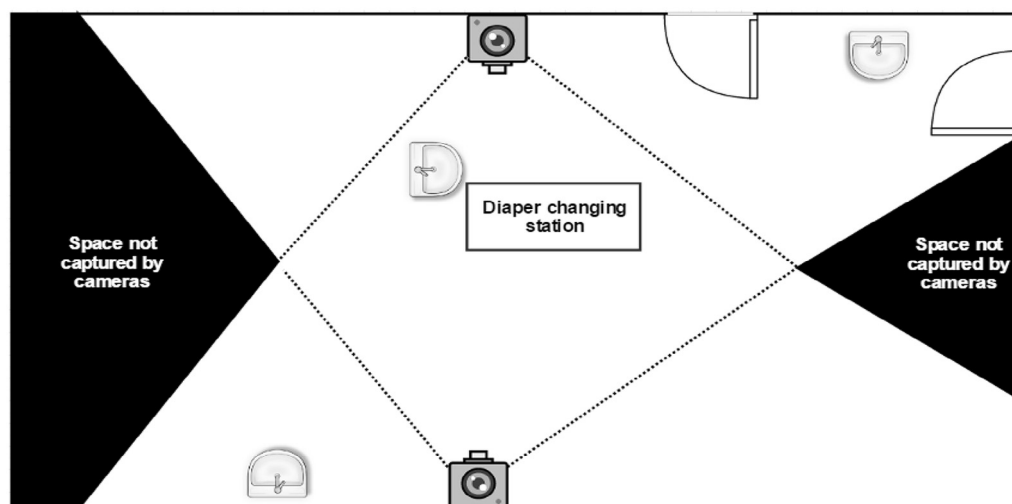


Fig 1. Room layout used for collecting handwashing compliance and efficacy data for children 2–22 months old. White space indicates areas in the room cameras were able to record. Dotted lines emanating from cameras define field of vision.

Download English Version:

<https://daneshyari.com/en/article/5566277>

Download Persian Version:

<https://daneshyari.com/article/5566277>

[Daneshyari.com](https://daneshyari.com)