Microbial Growth on the Nails of Direct Patient Care Nurses Wearing Nail Polish

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OBJECTIVES: To determine whether nurses wearing nail polish pose a greater infection risk to patients than nurses who are not wearing nail polish.

SAMPLE & SETTING: 89 direct patient care oncology nurses at a large midwestern National Cancer Institute–designated comprehensive cancer center.

METHODS & VARIABLES: The investigators assigned participants’ three middle fingers of their dominant hand to three groups: no nail polish, one-day-old polish, and four-day-old polish at the time of culture. Standard nail polish was applied using a consistent technique. Participants were required to work a shift immediately prior to nail cultures and practice routine hospital hand hygiene. Bacterial cultures were obtained from the nonpolished nail and the polished nails when the polish was one day old and four days old.

RESULTS: Comparison of colony-forming units revealed that one-day-old polish exhibited fewer gram-positive microorganisms than the unpolished nail (p = 0.04). The four-day-old polish showed significantly more microorganisms than the one-day-old polish (p = 0.03). The same trend was demonstrated for gram-negative microorganisms, but the difference was not statistically significant (p = 0.3 and p = 0.17, respectively).

IMPLICATIONS FOR NURSING: The results should be interpreted and applied to expert nursing practice in the care of vulnerable patient populations. Each institution and practitioner should make their own decisions and interpretation of evidence into practice.

KEYWORDS microbial growth; nail polish; direct patient care nurses

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The link between caregivers’ hands and transmission of pathogenic organisms has been discussed since hand hygiene was first implemented by Semmelweis to reduce the incidence of puerperal fever (Nuland, 2004). It is widely accepted that caregivers’ hands are a vehicle for transmitting health care–acquired infection (HAI) pathogens (Siegel et al., 2019). Improved efficacy of hand hygiene among direct patient care nurses is of vital concern in the oncology setting because immunocompromised patients are at high risk for morbidity and mortality associated with HAIs (Abou Dagher et al., 2017). Although the process of hand hygiene has been studied extensively, less is known about the effect that wearing nail polish has on the growth of potentially pathogenic microbes on the hands of direct patient care nurses outside of the operative setting.

Nursing dress code policy may vary among institutions, but it lacks a basis in research evidence regarding the use of nail polish by direct patient care staff (Cimon & Featherstone, 2017). A review of the historic literature revealed that evidence supports dress codes banning artificial nails in the operative setting and for individuals providing direct patient care (Gordin et al., 2007; McNeil et al., 2001; Pottinger et al., 1989; Wynd et al., 1994).

This study hypothesized that wearing nail polish likely increases microbes retained at the junction of the polish and nail over time, despite routine healthcare hand hygiene. The investigators sought to generate evidence-based recommendations for improving nursing infection prevention practice and dress code policy. The conceptual framework for this study is based on the five-step sequence of transmission of microbes via healthcare providers’ hands according to the evidence-based model for hand transmission during patient care, as shown in Figure 1.