American Journal of Infection Control ■■ (2017) ■■-■■

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

Hand hygiene: Attitudes and practices of nurses, a comparison between 2007 and 2015

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Key Words:
Hand hygiene
Handrubbing
Alcohol-based handrub
Nurses
Attitudes
Practices

Background: Hand hygiene reduces health care–associated infections significantly. However, international evidence suggests that practices are suboptimal. The objective of this study was to compare and contrast hand hygiene attitudes and practices and alcohol-based handrub (ABHR) use among nurses between 2007 and 2015.

Methods: In 2007, a random sample of nurses in a large teaching hospital was invited to complete a postal survey using a validated questionnaire. In 2015, the study was replicated among all nurses employed in a university hospital group, including the setting of the original study. Data were analyzed quantitatively and qualitatively using appropriate software.

Results: Attitudes to hand hygiene were positive and >90% of respondents' self-reported compliance before and after patient contact. However, 13% fewer in 2015 (42%) reported using ABHR >90% of the time compared with in 2007 (55%). Of nurses with <2 years' experience, 90% reported using ABHR >50% of the time compared with 73% of nurses with 2-5 years' experience. Barriers to ABHR improved, but remained high (skin sensitivity: 2007: 23%, 2015: 17%; skin damage: 2007: 18%, 2015: 13%; poor user acceptability and tolerance: 2007 and 2015: 25%).

Conclusions: Use of positive role models, the adoption of a positive social and cultural norm within the organization, and the provision of continuing professional development opportunities may prove useful strategies in harnessing good practice among graduate nurses and in preventing negative socialization from occurring.

Infection prevention and control is a cornerstone of patient safety programs worldwide; however, health care–associated infections (HCAIs) pose a significant threat to patient safety.[1] The impact of HCAIs can be considerable, resulting in poor patient outcomes and increased financial burden on health care organizations, patients, and their families. A point-prevalence survey conducted in Ireland, the setting for this study, reported a national prevalence rate of HCAIs in acute care facilities of 5.2%,[2] and the setting for this report has experienced considerable HCAI challenges in recent years, especially from those infections caused by multidrug-resistant organisms.[3,4]

Hand hygiene is widely recognized as an effective measure in controlling the spread of HCAIs.[5,6] However, despite this, compliance internationally among health care professionals with hand hygiene remains unacceptably low.[7-9] The preferred method of hand hygiene in most routine clinical situations is handrubbing.[1] It is defined as "applying an antiseptic hand rub to reduce or inhibit the growth of microorganisms without the need for an exogenous source of water and requiring no rinsing or drying with towels or other devices."[1]

Although there has been some focus internationally on exploring nurses' attitudes and practice regarding hand hygiene, research from Ireland regarding this topic has been limited.[10] In 2007, as part of a larger study, we conducted a study of hand hygiene practices and alcohol-based handrub (ABHR) use among nurses in a large teaching hospital. The study was replicated in 2015, and the setting was expanded to encompass additional sites, following the formation of a university hospital group anchored by the same large

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Conflicts of interest: None to report.

0196-6553/
https://doi.org/10.1016/j.ajic.2017.08.040

teaching hospital. In the interim, World Health Organization (WHO) hand hygiene guidelines were published.[1] Widespread implementation of the guidelines was supported nationally by governmental agencies and locally by the infection prevention and control team and by the hospital group management team. Hence, the aim of this article, similar to that of a previous study regarding physicians,[11] is to compare and contrast results of the 2 studies, conducted 8 years apart, concerning hand hygiene and handrubbing attitudes and practices of nurses in Ireland. Our report further attempts to provide insight regarding the demonstrable influence of national and international guidelines in the intervening years.

METHODS

Setting

In 2007, the study setting was a large regional teaching hospital providing major surgery, cancer treatment, emergency department services, critical care services, and other medical, diagnostic, and therapy services. In 2015, the expanded setting encompassed a university hospital group, comprising 6 hospitals functioning collectively as a single hospital system, and included the site of the original study, the largest of the hospitals. The hospital group offers a range of inpatient, outpatient, accident and emergency, and maternity care services; serves a population of approximately 400,000 people; and provides approximately 750 acute hospital beds.

Design

Both studies used a quantitative, survey approach, using a validated questionnaire comprising a validated Likert-ordinal-attitudinal scale, as the research instrument.

Between March and April 2007, a random sample of nurses employed in the aforementioned teaching hospital were invited to participate in a postal survey. Random sampling was achieved by sourcing a list of all registered nurses in the hospital from the nursing administration department. Each nurse was allocated a number (n = 934). Sample size was accurately calculated (n = 272) using online software, with a confidence level of 95% and a confidence interval of 5. Using the number allocated to each nurse, a random bias-free sample was generated using online software, resulting in 272 numbers. The paper-based survey was distributed by sending participants a cover letter, the questionnaire, and a self-addressed envelope via the internal hospital postal system and requesting return of completed questionnaires by mail. Participation indicated consent and was voluntary and anonymous.

Between November and December 2015, the setting was expanded to the aforementioned hospital group, and all nurses (n = 1,500) were invited to participate in the survey. The questionnaire was administered by the human resource department of the hospital group and sent to participants via internal staff e-mail addresses. Participants were electronically provided a link to the online study instrument and to a concise, unbiased explanation of the survey topic. Participation indicated consent and was voluntary and anonymous. A neutral research assistant, who was unknown to participants, acted as a gatekeeper and managed online survey responses. On completion of the online data collection process, to enhance the response rate, hard copies of the survey were also distributed at education and training seminars, and the data were subsequently added manually by the research assistant to the online database.

Study instrument

In 2007, after a literature review, a study instrument was selected for data collection. The validated questionnaire was originally developed at Colombia University, in New York, and was designed to assess barriers to adherence to the Centers for Disease Control and Prevention 2002 hand hygiene guidelines.[12,13] The survey was modified and contextualized to the Irish setting. A microbiologist and a statistician further reviewed the questionnaire for content validity, and a pilot test was carried out (n = 20). This helped to identify administrative and analytical issues with the research tool and process.

In 2015, the same questionnaire was used although slightly modified to reflect the publication of international hand hygiene guidelines in the interim. Additional questions were added after review by 2 experienced researchers (microbiologists) for content validity. No questions were removed. A pilot study was conducted (n = 9) contributing to the reliability and validity of the questionnaire and checking completion time and allowing for minor redrafting of some questions for greater clarity. The survey was composed of 42 and 57 questions in 2007 and 2015, respectively, with a Likert scale, with multiple choice and yes or no questions. It comprised 3 sections with a focus on demographics, hand hygiene practices, and handrubbing practices.

Statistical analysis

In 2007, data were analyzed using SPSS version 14 (IBM-SPSS, Armonk, NY) and in 2015 using SPSS version 24 (IBM-SPSS) and Survey Monkey (SurveyMonkey, San Mateo, CA) gold plan version. Standard descriptive statistics, including frequencies and percentages, were calculated to characterize the distribution of variables. Parametric testing was not performed because data were ordinal and not normally distributed.[14] The relationship between variables was considered where there was a rationale to do so. The Pearson χ^2 test of independence (nonparametric) allowed for testing of association between variables and was suited to the categorical, ordinal data (eg, Likert scale answers) in this study. We used a significance criterion of $P < .05$ for our statistical tests. During analysis, agree and strongly agree responses were combined, and likewise, disagree and strongly disagree responses were combined. This is reflected in Tables 1, 4 5 and 6 where the original 5 answer options have been reduced to 3 categories of responses.

Ethics

Both studies were approved by the research ethics committee of the hospital and hospital group and performed in accordance with the code of ethics of the Declaration of Helsinki.[15] Both studies were conducted anonymously with no identifiable data reported.

RESULTS

In 2007, based on the numbers targeted (n = 272), the response rate was 63% (n = 171), and in 2015 the response rate was 19% (n = 287) based on 1,500 nurses targeted. In 2007, 19% of respondents worked in medical wards, compared with 30% in 2015, and 17.5% in surgical wards, compared with 26% in 2015. In 2015, 28% of respondents had worked in clinical practice between 10 and 20 years and 47% for >20 years. Because this question was added in 2015, there are no data for 2007.

Awareness of WHO hand hygiene guidelines among respondents increased significantly ($P \leq .001$) by 54%, from 31% in 2007 (when draft guidelines were available) to 85% in 2015 (when published WHO guidelines were available). Awareness of Irish national