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Religion and culture: Potential undercurrents influencing hand hygiene promotion in health care

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Background: Health care–associated infections affect hundreds of millions of patients worldwide each year. The World Health Organization's (WHO) First Global Patient Safety Challenge, "Clean Care is Safer Care," is tackling this major patient safety problem, with the promotion of hand hygiene in health care as the project's cornerstone. WHO Guidelines on Hand Hygiene in Healthcare have been prepared by a large group of international experts and are currently in a pilot-test phase to assess feasibility and acceptability in different health care settings worldwide.

Methods: An extensive literature search was conducted and experts and religious authorities were consulted to investigate religious-cultural factors that may potentially influence hand hygiene promotion, offer possible solutions, and suggest areas for future research.

Results: Religious faith and culture can strongly influence hand hygiene behavior in health care workers and potentially affect compliance with best practices. Interesting data were retrieved on specific indications for hand cleansing according to the 7 main religions worldwide, interpretation of hand gestures, the concept of "visibly dirty" hands, and the use of alcohol-based hand rubs and prohibition of alcohol use by some religions.

Conclusions: The impact of religious faith and cultural specificities must be taken into consideration when implementing a multimodal strategy to promote hand hygiene on a global scale. (Am J Infect Control 2009;37:28-34.)

Health care–associated infection is a major patient safety problem worldwide, affecting hundreds of millions of patients each year.¹ Hand hygiene is considered the leading measure to reduce the impact of health care–associated infections and prevent pathogen transmission in health care settings,^{2,3} but compliance with hand hygiene measures remains poor overall.^{4,5}

The World Health Organization's (WHO) Global Patient Safety Challenge, "Clean Care is Safer Care," a core component of the WHO's World Alliance for Patient Safety,⁶ is dedicated to tackling the issue of health care–associated infection worldwide.^{1,7} The central strategy for achieving the goals of the Challenge

focuses on the development of WHO Guidelines on Hand Hygiene in Health Care⁸ and their implementation in a pilot-test phase. These guidelines consider new aspects of hand hygiene promotion, including behavioral and transcultural issues. Within this framework, the present article reflects the findings of the WHO's Task Force on Religious and Cultural Aspects of Hand Hygiene. The Task Force was created to explore the potential influence of transcultural and religious factors on attitudes toward hand hygiene practices among health care workers and to identify some possible solutions for integrating these into strategies for improving hand hygiene.

Research into religious and cultural factors influencing health care delivery has been conducted previously, but mostly in the field of mental health and in countries with a high influx of immigrants, where unicultural care is no longer appropriate.^{9,10} In a recent world conference on tobacco use, the role of religion in determining health beliefs and behaviors was raised and deemed a potentially strong motivating factor to promote tobacco control interventions.¹¹ A recent review has listed various potential positive effects of religion on health as shown by studies demonstrating its impact on disease morbidity and mortality, behavior, and lifestyle, as well as the capacity to cope with medical problems.¹² Beyond these particular examples, the complex association between religion and culture and health—particularly hand hygiene practices among

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health care workers—remains a lightly explored, speculative area.

METHODS

An exhaustive literature search of the US National Library of Medicine's PubMed database from January 1966 to October 2007 was conducted without language restrictions. The key search terms used were "religion," "culture," "hand hygiene," "hand washing," "hygiene," "alcohol-based hand rub," "Buddhism," "Christianity," "Hinduism," "Islam," "Judaism," "Orthodox Christianity," and "Sikhism." Bibliographies of retrieved articles were also hand-searched for additional studies. Relevant books on culture and health were consulted as well. Leaders from the most important religions affiliated with the World Council of Churches (a fellowship of churches associated in an ecumenical movement to promote Christian unity) and the Muslim World League (an Islamic nongovernmental organization that promotes Islamic unity) were individually consulted to gather knowledge regarding the importance of hygiene, hand hygiene, and alcohol prohibition within the precepts and holy texts of their faiths. A total of 2332 articles were retrieved through the Medline search. Many of the articles referred to "culture" in the microbiological sense and had to be eliminated, together with numerous articles restricted to mental health. Of the remaining articles, only 27 referred to cultural and/or religious aspects influencing health, in particular hygiene, hand hygiene practices, and alcohol prohibition according to the most important religions; these were retained for review.

The literature review and consultation with religious leaders were performed by 2 of the authors (B.A. and D.P.), who identified the relevant issues to be considered and then brought these to the attention of the task force members through a formal consensus process. The task force comprised experts in infection control and behavioral theories, as well as anthropologists and psychiatrists. They met in April 2005 and were consulted by e-mail and telephone in 2006 and 2007 to finalize the article after an additional literature search.

RESULTS

Transcultural aspects: Mirrors with many facets

Of the vast number of religious faiths worldwide, only the most widely represented were considered in this study (Fig 1).¹³ For this reason, this review cannot be considered exhaustive by any means. Some ethno-religious aspects, such as practices of local, tribal, animistic, or shamanistic religions, also were evaluated. Based on the literature review and the consultation of

religious authorities, the most important topics identified by the task force were the importance of hand hygiene in different religions, hand gestures in different religions and cultures, the interpretation of the concept of "visibly dirty hands," and the use of alcohol-based hand rubs in the light of alcohol prohibition by some religions.

Importance of hand hygiene in different religions and cultures

According to behavioral theories,^{14,15} hand cleansing patterns are most likely to be established in the first 10 years of life. This imprinting subsequently affects the attitude toward hand cleansing throughout life, particularly "inherent hand hygiene," which reflects the instinctive need to remove dirt from the skin. The attitude toward hand cleansing in more specific opportunities, called "elective hand hygiene practice," more frequently corresponds to the indications for hand hygiene during health care delivery.^{2,8} In some populations, both inherent and elective hand hygiene practices may be deeply influenced by cultural and religious factors, although establishing whether a strong inherent attitude toward hand hygiene directly determines an increased elective behavior has proven difficult. Hand hygiene can be practiced for hygienic reasons, for ritualistic reasons during religious ceremonies, and for symbolic reasons in specific everyday life situations (Table 1).

Islam, Judaism, and Sikhism have precise rules for handwashing specified in holy texts, and this practice punctuates several crucial times of the day. In the Sikh culture, hand hygiene is not only a holy act, but also an essential element of daily life. Islam places great emphasis on cleanliness¹⁰ in both its physical and spiritual aspects, and the Qu'ran gives clear instructions as to how this should be carried out (Table 1).^{16,17} With the exception of the ritual sprinkling of holy water on hands before consecration of the bread and wine and the washing of hands after touching the holy oil (the latter in the Catholic Church), the Christian faith does not include definite indications for hand cleansing. In general, the indications given by Christ's example refer more to spiritual behavior, but the emphasis on this specific viewpoint does not imply that personal hygiene and body care are not important in the Christian way of life. Similarly, the Buddhist faith has no specific indications regarding hand hygiene in daily life or during ritual occasions, apart from the hygienic act of washing hands after each meal.

Culture also may be an influential factor regardless of religious background. In certain African countries (eg, Ghana and some other west African countries), hand hygiene is commonly practiced in specific

Fig. 1. The most widely represented religions worldwide, 2005.

situations of daily life according to ancient traditions; for instance, hands always must be washed before raising anything to one's lips. Furthermore, it is customary to provide facilities for hand aspersion (a bowl of water with special leaves) outside the house door to welcome visitors and allow them to wash their face and hands before even inquiring of the purpose of their visit.

Unfortunately, the hypothesis that community behavior influences health care workers' professional behavior has been corroborated by only scanty scientific evidence. In particular, we found no data on the impact of religious norms on hand hygiene compliance in health care settings in which religion is very deep-seated. This topic merits further research from a global perspective to identify the most effective components of hand hygiene promotion in these communities.

Hand gestures in different religions and cultures

Hand use and specific gestures are universal but have considerable significance in certain cultures.¹⁸ The most common popular belief regarding the hands in African, Hindu, Jewish, and Muslim cultures is to consider the left hand "unclean" and reserved solely for "hygienic" reasons, with the right hand used for offering, receiving, eating, and gesticulating. In the Sikh culture, as in Mahayana and Tibetan Buddhism, a specific cultural meaning is given to the habit of folding

the hands together as a form of greeting, in prayer, or as a mark of respect. Studies have demonstrated the importance of the role of gestures in teaching and learning, and there is certainly a potential advantage to considering this in the teaching of hand hygiene, particularly in its representation in pictorial images for different cultures.^{19,20} In multimodal strategies to promote hand hygiene, posters placed in key points in health care settings have proven to be very effective tools for reminding health care workers to cleanse their hands.^{2,8,21} Efforts to consider specific hand uses and gestures according to local customs in visual posters, including education and promotion material, may help convey the intended message more effectively. This area also merits further research.

Interpretation of the concept of "visibly dirty" hands

Both the Centers for Disease Control and Prevention² and the recent WHO guidelines⁸ recommend that health care workers wash their hands with soap and water when visibly soiled. Otherwise, rubbing the hands with an alcohol-based formulation is recommended as the preferred practice for all other hand hygiene indications during patient care, because it is faster, more effective, and better tolerated by the skin. But infection control practitioners find it difficult to precisely define the meaning of "visibly dirty" and to provide practical examples when teaching hand hygiene. From a transcultural perspective, finding a

Table 1. Specific indications for hand hygiene according to the most widely represented religions worldwide

Religion	Specific indications for hand hygiene	Reason/purpose
Buddhism	After each meal To wash the hands of the deceased At the new year, young persons pour water over elders' hands	Hygienic/cleansing Symbolic Symbolic
Christianity	Before the consecration of bread and wine After handling holy oil (Catholics)	Ritual Hygienic/cleansing; ritual
Hinduism	During worship (puja) (water) End of prayer (water) After any unclean act (toilet)	Ritual Ritual Hygienic/cleansing
Islam	Repeating ablutions at least 3 times with running water before prayers (5 times/day) Before and after any meal After going to the toilet After touching a dog, shoes, or a cadaver After handling anything soiled	Ritual Hygienic/cleansing Hygienic/cleansing Hygienic/cleansing Hygienic/cleansing
Judaism	Immediately after awakening in the morning Before and after each meal Before praying Before the beginning of Shabbat After going to the toilet	Hygienic/cleansing Hygienic/cleansing Ritual Ritual Hygienic/cleansing
Orthodox Christian	After putting on liturgical vestments before the ceremony Before the consecration of bread and wine	Ritual Ritual
Sikhism	Early in the morning Before every religious activity Before cooking and entering the community food hall After each meal After taking off or putting on shoes	Hygienic/cleansing Ritual Hygienic/cleansing Hygienic/cleansing Hygienic/cleansing

Table 2. Alcohol prohibition in some religions

Religion	Alcohol prohibition	Reason for alcohol prohibition	Alcohol prohibition potentially affecting the use of alcohol-based hand rub
Buddhism	Yes	Kills living organisms (bacteria)	Yes, but surmountable
Christianity	No	—	—
Hinduism	Yes	Causes mental impairment	No
Islam	Yes	Causes disconnection from a state of spiritual awareness or consciousness	Yes, but surmountable
Judaism	No	—	—
Orthodox Christian	No	—	—
Sikhism	Yes	Unacceptable behavior disrespectful to the faith; considered an intoxicant	Yes, possibly

common understanding of this term is even more difficult; for example, a spot of blood or other proteinaceous material is more difficult to see on very dark skin. Furthermore, in a hot and humid climate, the need to wash the hands with fresh water also may be driven by the feeling of sticky or humid skin.

According to some religions, the concept of dirt is not strictly visual and reflects a wider meaning, referring to interior and exterior purity.^{22,23} Among some health care workers, such a perspective may lead to the perceived need to wash the hands with water when feeling “impure” and may be an obstacle to the use of alcohol-based hand rubs. The cultural issue of

feeling cleaner after handwashing rather than after hand rubbing actually was raised recently during a widespread hand hygiene campaign in Hong Kong and may underlie the inability to sustain the excellent hand hygiene compliance attained during the recent severe acute respiratory syndrome (SARS) pandemic (W.H. Seto, personal communication).

From a global perspective, the foregoing considerations underscore the importance of making every possible effort to consider the concept of “visibly dirty” in accordance with racial, cultural, and environmental factors, and to adapt it to local situations with appropriate strategies to promote hand hygiene.

Fig. 2. A Muslim health care worker using an alcohol-based hand rub before contact with a patient at the Saudi Arabian National Guard Health Affairs Hospital, Riyadh. (Reprinted with permission from the health care worker.)

Use of alcohol-based hand rubs and alcohol prohibition by some religions

Based on scientific evidence, the use of alcohol-based hand rubs is considered the gold standard for hand hygiene in health care.^{2,3,8,16,24,25} For this purpose, WHO recommends specific alcohol-based formulations that take into account antimicrobial efficacy, local production, distribution, safety, and cost issues at a country level worldwide.⁷ In some religions, alcohol use is prohibited or considered an offense requiring a penance (Sikhism) or is considered to cause mental impairment (Hinduism, Islam) (Table 2). Nonetheless, in theory, those religions with an alcohol prohibition in everyday life demonstrate a pragmatic vision that allows acceptance of the most valuable approach in the perspective of optimal patient care delivery. Despite this generally tolerant approach, however, the religious background still may influence some health care workers who are unwilling to use alcohol-based formulations due to either reluctance to come in contact with alcohol or concerns about alcohol ingestion, inhalation,

or skin absorption.^{8,26} Even the designation of a product simply as an “alcohol-based formulation” could become an obstacle for the implementation of worldwide recommendations.

Islamic tradition poses the toughest challenge to alcohol use. Alcohol is clearly defined as forbidden (*haram*) in Islam, and some Muslim health care workers may feel ambivalent about using alcohol-based hand rub formulations. But in fact the Qu’ran permits the use of any substance that man can manufacture or develop to reduce illness or contribute to better health, including alcohol used as a medicinal agent. Similarly, cocaine is allowed for use as a local anesthetic, but not as a recreational drug.

To better understand Muslim health care workers’ attitudes toward alcohol-based hand cleansers in an Islamic country, the study by Ahmed et al²⁶ conducted in the Kingdom of Saudi Arabia is very instructive. Interestingly, although Saudi Arabia is considered the historic epicenter of Islam, no state policy or permission or *fatwa* (Islamic religious edict) was sought for the approval of alcohol-based hand rubs. Indeed, hand rub dispensers have been installed in numerous health care settings since 2005.²⁶ This experience demonstrates that alcohol-containing hand rub solutions are indeed finally acceptable to many Muslim health care workers, even within an Islamic kingdom legislated by *Sharia* (Islamic law), and this may encourage other Muslims to reconsider their attitude (Fig 2).

One concern of health care workers regarding the use of hand rub formulations is the potential systemic diffusion of alcohol or its metabolites after skin absorption or airborne inhalation. Only a few anecdotal and unproven cases of alcohol skin absorption leading to clinical symptoms have been reported in the literature.^{27,28} In contrast, reliable studies on human volunteers clearly demonstrate that the quantity of alcohol absorbed after application is minimal and well below toxic levels for humans.²⁹⁻³² In a study mimicking high-quantity, high-frequency use,³¹ the cutaneous absorption of 2 alcohol-based hand rubs with different alcohol components (ethanol and isopropanol) was carefully monitored. Whereas insignificant levels of ethanol were measured in the breath and serum of a minority of the participants, isopropanol was not detected. Finally, alcohol smell on the skin may be an additional barrier to the use of hand rubs; further product development should be conducted to eliminate this smell from hand rub preparations.

Possible solutions

In addition to targeting areas for further research, some possible solutions to existing problems may be identified (Table 3). For example, starting in childhood,

Table 3. Religious and cultural aspects of hand hygiene in health care and potential impact and/or solutions

Topic	Potential impact and/or solutions
Hand hygiene practices	<ul style="list-style-type: none"> Both inherent and elective hand hygiene practices are deeply influenced by cultural and religious factors. Area for research: potential impact of some religious habits on hand hygiene compliance in health care.
Hand gestures	<ul style="list-style-type: none"> Consider specific gestures in different cultures to be represented in posters and other promotion material for educational purposes in multimodal hand hygiene campaigns.
The concept of "visibly dirty" hands	<ul style="list-style-type: none"> Consider different skin color, different perception of dirtiness and variation of climate when educating health care workers on hand hygiene indications.
Prohibition of alcohol use	<ul style="list-style-type: none"> Consultation with local clergy and wise interpretation of holy texts. Focus groups on this topic within education strategies. Use of the most appropriate term for alcohol-based hand rubs. Careful evaluation of patient involvement. Areas for research: quantitative studies on potential toxicity of accidental ingestion and inhalation or skin absorption of alcohol related to alcohol-based hand rubs; elimination of alcohol smell.

the inherent nature of hand hygiene, which is strongly influenced by religious habits and norms in some populations, could be shaped in favor of an optimal elective behavior toward hand hygiene. Indeed, some studies have demonstrated that it is possible to successfully educate children of school age to practice optimal hand hygiene to help prevent common pediatric community-acquired infections.³³⁻³⁵

When preparing such guidelines, international and local religious authorities should be consulted and their advice clearly reported. An example of this is the statement issued by the Muslim Scholars' Board of the Muslim World League at its 16th annual meeting in Mecca, Saudi Arabia, in January 2002: "It is allowed to use medicines that contain alcohol in any percentage that may be necessary for manufacturing if it cannot be substituted. Alcohol may be used as an external wound cleanser, to kill germs and in external creams and ointments."³⁶

In hand hygiene promotion campaigns in health care settings in which religions prohibiting the use of alcohol are represented, educational strategies should include focus groups on this topic to allow health care workers to openly raise their concerns regarding the use of alcohol-based hand rubs, help them understand the scientific evidence underlying this recommendation, and identify possible solutions to overcome obstacles (Table 3). Results of these discussions could be summarized in an information leaflet to be produced and distributed locally. It has been suggested that in settings in which the observance of related religious norms is very strict, the term "alcohol" be avoided in favor of the adjective "antiseptic" when describing hand rubs. But concealing the true nature of the product by using a nonspecific term may be construed by some as deceptive and considered unethical. Further research is needed before any final recommendation along these lines can be made. Finally, the opportunity to involve patients in a

multimodal strategy to promote hand hygiene in health care should be carefully evaluated. Despite its potential value, this intervention may be premature in settings in which religious proscriptions are taken literally; rather, it could be a later step, after the achievement of awareness and compliance among health care workers.

CONCLUSIONS

Religious faith has made many important contributions to the ethics of health care and has helped focus the attention of health care providers on both the physical and spiritual nature of humans. However, well-known examples exist of health interventions in which a religious viewpoint had a critical impact on implementation or even interfered with it.^{37,38} An awareness of commonly held religious and cultural beliefs is vital when attempting to apply innovative concepts of modern medicine and implementing good clinical practice in today's increasingly mobile, multicultural health care community. In response to the challenge of incorporating an understanding of religious and cultural beliefs into programs to promote hand hygiene compliance, our study has identified some of the implications of those beliefs, has offered some potential solutions in response, and has suggested some areas for future research.

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