

Addressing the Prevalence of Healthcare-Associated Infections in India

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A principle rooted in the Hippocratic medical tradition is “first, do no harm,” a core value for healthcare providers around the world. This principle is based on the importance of ensuring that no medical harm is incurred by patients before any procedures are performed. However, this principle is often violated through unseen infections that affect patients in the clinical setting. Healthcare-associated infections (HCAIs) are illnesses that originate within hospitals and healthcare facilities where patients receive treatment. The International Nosocomial Infection Control Consortium reports the HCAI prevalence in India as approximately 9.06 infections per 1,000 intensive care unit (ICU) patient days; the HCAI infection rate can vary between 4.4 and 83.09 percent across different hospitals in India, which is considerably higher than other wealthy countries (Iyer et al., 2015). Not only can HCAIs have a negative impact on patients’ health, but they can also pose risks in the long run and present a financial burden. This article will address interactions between factors such as lack of resources for sanitation, knowledge gap in proper hospital hygienic practices, poor accountability procedures, and accuracy of hospital accreditation. Additionally, I explore ways for bridging the cultural gap by integrating Ayurvedic alternative medicine principles to allow for better retention of sanitation practices among communities at the local level. Overall, by working through these detailed factors, the Indian healthcare system can focus on going above and beyond its “do no harm” guideline and enhancing patients’ lives by addressing behavioral and structural challenges related to infections originating in the clinical setting.

Keywords

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Introduction

Healthcare-associated infections (HCAIs) are illnesses that originate from within hospitals and healthcare facilities where patients receive treatment. They may occur in a time frame of 48 hours to 30 days after a patient's admission to a hospital. Settings with potential HCAI exposure include but are not limited to acute care hospitals, home care, ambulatory care, nursing homes, and family medicine clinics (Haque, Sartelli, McKimm, & Abu Bakar, 2018, pp. 2321–2333). The types of HCAIs include central line-associated bloodstream infection (when a catheter is placed directly into a vein that leads to the heart), catheter-associated urinary tract infections (infection of the urinary system related to the placed catheter), surgical site infection (infection occurring at the site where a surgical procedure was performed), and ventilator-associated pneumonia (lung infection developed in patients receiving respiratory ventilator assistance) (Centers for Disease Control and Prevention, 2014).

The International Nosocomial Infection Control Consortium reports the HCAI prevalence in India as approximately 9.06 infections per 1,000 intensive care unit (ICU) patient days; the HCAI infection rate can vary between 4.4 and 83.09 percent across different hospitals in India, which is considerably higher than other wealthy countries (Iyer, Sewlikar, & Desai, 2015). This may lead to higher morbidity and mortality rates, which can in turn present a greater economic burden for the healthcare system in India (Iyer et al., 2015). Patients who are affected by HCAIs may face extreme financial costs as their hospital stays are prolonged. A study tracking HCAIs in a tertiary care public hospital found that the mean length of hospital stay for HCAI patients who were matched with controls by age and gender was 11.96 days more than non-HCAI patients (Babbar, Biswal, Digamber, & Gupta, 2019). Therefore, the total cost to both the patient and the hospital may be two to four times larger than for a noninfected patient (Satpathy, Chaudhry, Gupta, & Kapil, 2013). A patient who is diagnosed with an HCAI and must stay in the hospital's intensive care unit can face a financial cost of up to INR 2,23,155.81 (approximately USD 2,932.81) per day (Kumar, Jithesh, & Gupta, 2016, pp. 398–403). Furthermore, HCAI patients may face a higher risk of long-term disability and resistance to antimicrobials and antibiotics in the years after their sickness. The health and financial burden of HCAIs cannot easily be resolved in the short term (Babbar et al., 2019).

Overall, HCAIs pose serious harm to the Indian healthcare system as they increase healthcare costs, decrease the quality of care delivered, and negatively impact patient health outcomes through various methods.

Improving Effective Sanitation Practices

The main cause of HCAI transmission to patients in Indian hospitals is poor sanitation practices. Hospital staff who misjudge direct patient contact for routine examination, such as measuring blood pressure or temperature screening, or touching an object in a patient's room as still being sterile can inadvertently increase the risk of HCAIs due to the spread of bacteria from one patient to another (Satpathy et al., 2013). Effective sanitation is one of the most important factors in preventing HCAIs, as many studies have reported a significant reduction in HCAI transmission from patient to patient when hospital staff practiced good hand hygiene such as washing their hands or using alcohol-based disinfectants before and after coming into contact with patients (Allegranzi & Pittet, 2009, pp. 305–215).

Unfortunately, there is a knowledge gap between education and application in many hospitals. Everyone, including cleaning staff and practicing physicians, understands what healthy sanitation practices consist of, but many individuals express disbelief in their effectiveness (Joshi et al., 2012, pp. 340–344). Such skepticism may be accompanied by a shortage of available resources as well. For instance, in a qualitative study conducted at a rural teaching hospital, many healthcare professionals reported their preference for regular soap over alcohol-based disinfectants. Additionally, washbasins and hand sanitizers are not easily available, and staff reported how it was not feasible to sanitize equipment and their hands when going from patient to patient every single time (Joshi et al., 2012, pp. 340–344). The ideal practice of a hospital staff member being able to wash their hands 20 to 30 times each day is affected by the lack of clean water, overcrowded hospital environments, and understaffed shifts (Diwan et al., 2016; Pulla, 2020).

When it comes to handwashing techniques, studies report that practices may also vary from person to person among hospital staff due to multiple factors, including experience, personal attitudes, social norms, and peer pressure (Diwan et al., 2016). This gap is further exacerbated by a lack of strong administrative oversight that leads to misinformation and a shift of priorities. Implementing mandatory educational workshops for hospital staff to understand best practices for handwashing and limiting the spread of infection can greatly help reduce HCAI risk at the ground level.

Accountability Frameworks

Accountability is equally as important as education when it comes to HCAI risk reduction practices. When there is infrastructure in place for staff to regularly report data about the prevalence of HCAs among patients, it provides accountability and reinforces the guidelines that are set in place. Many institutions have reported the presence of HCAs but have not firmly practiced a zero-tolerance policy (where the ultimate goal is to have zero patient cases of HCAs) (Biswal, Mewara, Appannanavar, & Taneja, 2015, pp. 12–14). Accountability reporting procedures allow many stakeholder groups (e.g., administrators, policymakers, healthcare workers, patients) to weigh in and drive change to attain this goal of zero HCAs among patients.

Fear of retaliation also plays a part in the issue of accurately reporting HCAs and driving change. Hospital staff may be afraid of punishment if there is an increasing number of HCAs occurring in a hospital, and they may purposefully avoid diagnosing patients with HCAs (in favor of other less serious diagnoses) or fail to report HCAs to higher officials. In doing so, essential information about the condition of a hospital's environmental standards is lost. On the other hand, hospital administrators may also face a barrier posed by local news media channels. Fear of media reports sparking outrage in the community has led to the rise of falsified HCAI data (Biswal et al., 2015, pp. 12–14). However, media coverage may also serve as the spark necessary to drive social awareness about HCAs as hospitals are forced to accept responsibility for transparently addressing HCAI risk for citizens in their surrounding communities.

In order to address these issues, a strong “national benchmarking system of HCAs with public reporting of results” must be put into place (Biswal et al., 2015, pp. 12–14). Currently, there is a severe gap in hospital accreditation as many hospitals do not adhere to health agencies' established guidelines, such as the Indian Public Health Standards, Indian Council of Medical Research guidelines, and Kayakalp guidelines (Pulla, 2020). These guidelines extensively address HCAI protocols; however, there is currently no infrastructure in place that legally requires hospitals to practice and

report infection control outcomes. Additionally, previous legislation such as the Clinical Establishments (Registration and Regulation) Act, 2010, has only been adopted at the state level of the legislature and is not mandated at the national level.

Therefore, it is increasingly important for the national government to require hospitals to maintain accreditation licenses that are strictly regulated by the existing National Accreditation Board for Hospitals and Healthcare Providers (NABH). Currently, only 714 hospitals are accredited by the NABH, which is a vast minority considering the many tens of thousands of hospitals in India overall. Implementing the formation of internal infection control committees within each individual hospital allows for more standardized surveillance of HCAs that adapts to the needs of a hospital in tandem with a blanket national surveillance program associated with accreditation (Swaminathan et al., 2017; Centers for Disease Control and Prevention, 2021). However, there also needs to be a regional push to work with public hospitals located in rural areas that serve marginalized populations. It will not suffice to implement a national mandate and expect small-scale hospitals with a smaller financial endowment to be able to maintain perfect infection control standards. Ground-level realities such as overcrowding in rural hospitals, staff shortages, and lack of clean water and soap must also be addressed through a combination of more focused funding efforts and educational programs for not only hospital staff but also community members (Safdar et al., 2014, pp. 480–493; Link & Phelan, 1995, pp. 80–94; Anand, 2017).

Bridging the Cultural Gap

The existing cultural framework related to health practices can especially be used as a strong launchpad for promoting sanitation and reducing HCAs on a local scale. An important Indian cultural practice that is marginalized by institutionalized modern medicine is Ayurveda, an ancient natural system of medicine that focuses on bodily imbalances and stresses as the reasoning behind disease and illness (Johns Hopkins Medicine). The 3,000-year-old system is equally respected as Western medicine by many Indians, with many investigations of Ayurvedic products (such as herbs, minerals, and metals) underway. While Ayurveda's complexity is not yet fully understood, many studies have addressed the importance and effectiveness of traditional Ayurvedic plant products in purifying and disinfecting environments (Mohagheghzadeh, Faridi, Shams-Ardakani, & Ghasemi, 2006, pp. 161–184). A 2019 study demonstrated the effectiveness of garlic peel, turmeric powder, ajwain seed powder, and loban fumigation in disinfecting surfaces that contained harmful drug-resistant methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria, a strain that is highly implicated in nosocomial (originating in a hospital) infections (Bhatwalkar, Shukla, Srivastava, Mondal, & Anupam, 2019, pp. 203–206). As part of the burden is the lack of easily affordable and available disinfecting products, a potential solution is to further investigate the properties of Ayurvedic products in order to equip rural healthcare clinics with well-known, effective natural Ayurvedic products that can be found in most villages. Additionally, rural communities may be much more accepting of traditional, familiar disinfectant practices combined with proper sanitation practices rather than presenting Western disinfectant products. In this way, bridging the cultural gap can allow for better retention of sanitation practices among communities at the local level.

Conclusion

In conclusion, change must happen at the national and local levels simultaneously in order to combat HCAs at the individual level effectively. Highly regulated government-level structural guidelines would set the standard for medical sanitation practices, but it is also not possible to expect to see a complete trickle-down of changes without behavioral interventions. At a local level, there must be a firm push for educational outreach efforts that focus on the community's specific needs rather than a one-size-fits-all model. In rural communities, more emphasis needs to be placed on considering traditional Ayurvedic practices in combination with Western medical practices. Acknowledging the continued relevance of non-Western biomedical knowledge in contributing to global health problems aids in breaking down the fear of modern medical procedures and bridging gaps between sanitation systems that share underlying core values. In the face of overburdened healthcare systems with limited resource bandwidth, such behavioral interventions can readily be implemented, even outside of India. Overall, through implementing these methods, healthcare systems can focus on going above and beyond the "do no harm" guideline to eliminate the harm caused by HCAs and improve patient well-being.

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