ORIGINAL ARTICLE

Ethics of hospital infection control: Knowledge and perception of healthcare workers in a Tertiary Care Hospital

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ABSTRACT

Background: Hospital infection prevention and control (IPC) ethics are an important yet neglected component of patient safety and wellbeing. The IPC program in a hospital is mainly focused to prevent the transmission of drug resistant organisms. Poor compliance of such program can lead to nosocomial infections and impaired patient's safety, which is against the moral principles of ethics.

Material and Methods: This qualitative study was conducted in a tertiary care hospital Rawalpindi affiliated with National University of Medical Sciences Rawalpindi. Semi structured, informal interviews were taken from health care workers, recorded and analyzed based on thematic analysis.

Results: A total of 20 health care workers were selected and interviewed belonging to different specialties including two nurses. Majority of the participants had fairly good knowledge of hospital IPC but poor knowledge of ethical issues related to poor IPC practices. Autonomy was the dominant factor in compromised IPC practices.

Conclusion: Ethics of hospital IPC is an important subject of patient safety and hospital success. It should be taught and incorporated in training at all the levels of medical education.

Keywords: Autonomy, Consequentialism, Deontology, Infection prevention and control, Leadership, Nosocomial infections

BACKGROUND

Hospital infection prevention and control (HIPC) is an important key performance indicator of any hospital's success and patient safety. In developed countries, 4-8% of patients acquire hospital-acquired infections (HAI).[1] The transmission of drug-resistant bacteria, especially the "superbugs," can lead to HAIs, prolonging hospital stays, increasing morbidity, and raising mortality.[2,3] The treatment of these drug-resistant superbugs also places an extra financial burden on the hospital budget.

Ethical issues and challenges faced in the implementation of these practices are always debatable. On one hand, the debate centers on enforcing or prioritizing the patient's autonomy and dignity (Deontological approach), while on the other, critics argue that the health of others (patients and healthcare workers) is more important than one patient's self-autonomy and dignity (Consequentialist approach). There are many ethical issues related to Infection Prevention and Control (IPC), such as placing patients colonized with drug-resistant organisms in isolation, taking swabs for Methicillin resistant *Staphylococcus aureus* (MRSA) screening, and subsequently reporting the patient's name to the administration, thereby restricting them from clinical duties. Other ethical dilemmas include enforcing the wearing of PPEs, which could breach personal freedoms, and restricting access to antibiotics for physicians to prevent drug resistance. All such ethical issues have one common question: whether the risk of enforcing an act outweighs the benefits to the patients. Who determines this line of risk-benefit analysis, and on what evidence?

The story of the "Eyam Plague" is a well-known example where the entire village resorted to self-quarantine.[4] Similarly, in the recent COVID-19 pandemic, many ethical issues were raised and published regarding quarantine and isolation facilities, a racist approach towards Asian and African regions, and vaccination prioritization.[5]

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There was no clear demarcation of when to quarantine and isolate, nor whether the risk of transmission outweighed the benefits of quarantine. The facilities provided for quarantine and isolation were also questionable, compromising the individual's autonomy and freedom. The four basic principles of ethical norms are beneficence, non-maleficence, justice, and autonomy.[6] Ignorance and lack of adherence to IPC present ethical dilemmas, as they can harm patients admitted to hospitals. Sometimes, doctors themselves are responsible for the spread of these resistant organisms, such as Methicillin resistant *Staphylococcus aureus* (MRSA). Doctors serve as role models, and their attitudes and behaviors influence other healthcare professionals in hospitals.[7,8] Some studies conclude that ethical considerations and practices among doctors show less compliance compared to other healthcare professionals.[9,10] This could be due to the fact that doctors are overconfident in their knowledge of clinical ethics and compliance. They can contribute to the spread of drug-resistant organisms and are sometimes regarded as "super spreaders".[11,12] Lack of knowledge about clinical ethics and infection control ethics among healthcare workers is another major source of transmission of drug-resistant bacteria.

In Pakistan, no such study has been conducted to explore the perception of infection control ethics among healthcare workers. With this background, we planned a study in our hospital to evaluate the ethical knowledge and practices our healthcare workers are following related to IPC and challenges they face in implementing such practices.

MATERIAL AND METHODS

The study was conducted in a 1,000-bed tertiary care hospital in Rawalpindi, affiliated with the National University of Medical Sciences (NUMS). Two researchers (both medical microbiologists) were mainly involved in the study: one was a senior consultant and professor, while the other was a junior consultant. Both have a special interest and hold postgraduate degrees in fields related to hospital infection prevention and control. Permission for the study was obtained from the hospital's Ethics Committee. The study was carried out using the "thematic analysis" approach as described by Braun V and Clarke C.[13] To have a diverse knowledge of infection control ethics, we included health care workers from two different tiers in hospital that is doctors and nurses since both are closely related to such practices. Included participants were from various specialties with different clinical/professional experience, all working in the same hospital. Informed consent was obtained from all participants, and their interview confidentiality was ensured.

Data was collected through semi-structured interviews conducted with the participants. All participants were contacted by phone, and a time for the interview was set. The interview lasted 15-20 minutes. It was an informal interview and was conducted preferably in the participant's office when no one else was present. All interviews were transcribed in English by the junior consultant. The interviews were conducted in Urdu (the national language). All the interviews were read thoroughly, coded, and the relevant themes and sub-themes were analyzed.

RESULTS

A total of 20 healthcare workers were randomly selected for interviews. Among them, 12 were male and 8 were female. The specialties of these 20 HCWs included: 2 medical specialists, 2 surgical specialists, 2 healthcare administrators, 2 gynecologists, 2 anesthetists, 2 ophthalmologists, 4 senior residents, one infectious diseases specialist, one critical care specialist, and 2 female nurses. We identified 5 main themes from over 20 various codes obtained during the interviews (Table-I). These 5 themes are discussed in this paper separately.

1. **Autonomy/ Unprofessional Behavior**: During interviews, one doctor said, "In this seniority and experience, you expect us to follow what you say?" Another senior consultant said "It was very difficult for us to wear proper PPE every time we enter my ICU". One of the consultants was of the view that there is no role of wearing shoe cover while going to ICU. Another consultant showed his reservation on giving a screening swab for MRSA every month. Self-autonomy was the most common and dominant theme we observed. This was more common among senior specialists (Professors/Associate) than junior ones. Very few of the participants were in the denial phase, not believing in the transmission of drug-resistant organisms. Some clinicians acknowledged the importance of hand hygiene and the transmission of resistant organisms but did not follow these practices routinely.

2. **Leadership**: Many participants believed that leadership was not committed to infection control practices. Some stated, "Infection control is the least priority for the hospital administration; they can spend millions on buying costly equipment, but they would not agree to buy things such as hand sanitizers and PPEs." Some participants believed that if their departmental head was not interested in infection control practices, then why should they be...?
3. **Resources**: Almost all the participants interviewed considered the lack of resources as an important cause of poor hospital infection control and the spread of infections. One of them said, "We do not have proper PPE, and N95 masks, so how can you expect us to follow IPC practices?" Another said, "We don't get regular supplies of hand sanitizers, so how can we prevent the transmission of infections?" A common complaint among participants was the lack of "isolation facilities" with proper negative pressure ventilation to house infectious cases.
4. **Training and Education**: Among all the participants, only two had knowledge of the "ethical implications of poor hospital infection control practices." The remaining participants had knowledge of hospital IPC but not the ethical aspects. No participant had received formal training in a hospital IPC training program. However, almost all had attended seminars and workshops specially during COVID-19 pandemic on hospital IPC but not on the ethical aspects.
5. **System-driven Problems**: One participant said, "How can we follow IPC practices when we have duties in different wards? We rotate regularly through different wards." All participants acknowledged that the hospital has a "hospital infection control committee," but only a couple of them knew its responsibilities or any training activities conducted by the committee to develop awareness among HCWs. One participant said, "We try to show good IPC practices and handwashing compliance in our department because poor compliance will lead to a bad reputation for the department, and the head of the department will give punishment to the individual." Another participant argued that it is good to place an infectious patient in an isolation but complained of lack of staff for running that isolation facility. He further added that it is difficult to control the visitors not see their patient in isolation facility.

Table-I: Major themes identified after analysis of codes from interviews.

S. No	Codes	Themes
1.	- Attitude - Lack of Commitment - Denial - Acceptance	Unprofessional behavior/ Autonomy
2.	- Leadership - Role model - Leadership commitment	Leadership
3	- Lack of handwashing facilities - Lack of isolation facilities - Poor infrastructure - Lack of PPEs - Lack of sterilized dressings - Under staffing	Resources
4	- Lack of training - Lack of education - Awareness from gross root level	Training and education
5	- Multifactorial, additional responsibilities/duties - System improvement - No team buildup as people rotate - Fear of punishment	System driven problems

DISCUSSION

To the best of our knowledge, our study is among very few studies conducted in Pakistan based on thematic analysis on hospital infection control ethics. A study was conducted by Abbas S, in 2021 during the COVID-19 pandemic to evaluate the infection control practices and challenges faced during the pandemic.[14] Our study highlights an important issue of hospital infection control ethics in our setup and its perception among healthcare workers. Overall, we observed a fairly good perception of hospital infection control practices but poor knowledge and perception of the ethical aspects among HCWs. In our study, we found that although HCWs have good knowledge of hospital IPC, the priority they give to this important element is somehow not the highest.

We conducted interviews with HCWs from various specialties. Out of 20 HCWs, 18 were working or practicing in specialized fields, while only two were nurses who were also involved in care of critically ill patients where infection control is most important for patient safety. One of the nurses had been working in an intensive care unit for the last three years. Among the senior doctors, autonomy was a dominant factor in the implementation, or lack thereof, of hospital IPC. They viewed external policies, especially using antibiotics as per culture reports, and wearing PPEs as a challenge to their clinical autonomy and clinical judgment. This is in line with the deontology approach where self-autonomy and right to prescribe medicine is more important. Some studies show the enforcement of strict PPEs while visiting patients in isolation can patient's neglect by causing physicians and nurses to make fewer bedside visits.[15] In another study, clinical autonomy was found to be a major contributor to non-adherence to external policies.[16] One study concluded that hand hygiene compliance was inversely related to knowledge and seniority.[17] Those who were trained abroad, such as in the UK and USA, were more in the habit of following infection control practices and understanding their ethical implications. Their concepts were clearer, and their thoughts were more inclined towards following strict hospital IPC practices. Their knowledge of the poor and adverse outcomes due to poor IPC and the ethical issues related to poor IPC was greater compared to senior consultants. This could be due to the fact that many senior consultants completed their training around 20-25 years ago, at a time when the focus on hospital IPC was less compared to the past 10 years. As a result, they developed practices and behaviors with less focus on IPC. We observed that senior doctors were more inclined towards the deontological approach while junior doctors and specially those trained abroad believed more on the "greater good" for maximum people (consequentialist approach).

The role of leadership in the implementation of hospital IPC policies and practices is often undermined. Without leadership, a hospital cannot have good standards of IPC practices. In our interviews, two of the HCWs were in the leadership roles. However, they had never obtained formal training or attended workshops on hospital IPC. In fact, they had very limited knowledge of the ethical aspects and implication of poor hospital infection control practices. They acknowledged the importance of leadership but admitted that their knowledge of how to implement IPC policies and act as role models was insufficient. Leadership's IPC practices trickle down to the junior level. HCWs who aspire to join leadership roles should receive training at both the postgraduate and undergraduate levels.

Almost all the participants interviewed expressed concerns about the availability of resources required for optimal IPC practices in hospitals. The lack of resources includes PPEs, sanitizers, and manpower. Without adequate manpower, the implementation of hospital infection control practices would be a futile effort. The majority complained about the shortage of trained staff, and some mentioned that their staff members were temporary. One day, a staff member performs duties in one ward, and the next day, a new person joins who is not familiar with the ward's routine and the required IPC practices. Some participants also complained about inadequate PPEs as barriers to effective IPC practices. Another common problem raised by many was the lack of handwashing facilities in wards and ICUs. One senior consultant mentioned that HEPA filters were not functioning, resulting in fungus infestation in the critical areas.

Training and education are key elements; without them, poor IPC practices can lead to ethical issues. Out of 20 participants, only two were able to fully understand the concept of ethical issues related to poor IPC practices. One senior consultant even said, "Why should we get training at this seniority and experience on the ethics of

hospital infection control?" Lack of training and education can lead to unsafe practices, directly risking patient health.[18,19] One study concluded that simply training and educating on IPC practices such as handwashing is not enough for effective IPC. Multimodal strategies—such as behavioral change, feedback, reminders, and written materials—along with training and education, are required for a desirable outcome.[20,21]

Our study has some limitations. First, it is a single-hospital study, and its results cannot be generalized. Second, not all the specialties of the hospital are involved. A multicenter study with more participants from various specialties is suggested in the future to gain a better understanding of the knowledge of hospital infection control ethics among healthcare workers.

Based on our study findings and significant lack of knowledge about infection control ethics among health care workers we think it is high time now that all the HCWs should have basic knowledge about clinical and infection control ethics for the safety of patients. Two main principles related to IPC ethics should be focused that is doing good to the patient (beneficence) and avoiding harm (non-maleficence). The goal should be to maintain a balance between individual's right and self-autonomy maximum good to people. To achieve this target, we propose some recommendations that could help improve hospital infection control ethics and patient safety in the future:

1. All undergraduate medical and postgraduate students should have the ethical aspects of poor hospital infection control included in their syllabus.
2. Regular workshops should be conducted on ethical training for healthcare workers. The behaviors and practices can be changed by regularly attending academic activities on hospital IPC.
3. The hospital infection control committee, hospital antimicrobial stewardship committee and the hospital ethics committee should be interlinked and receive formal training on the ethical aspects of infection prevention and control.
4. Hospital administrators and leaders are role models. They should undergo training on the ethical aspects of infection prevention and control before assuming administrative or leadership roles.

CONCLUSION

Ethics of hospital IPC is an important subject of patient safety and hospital success. To inculcate professionally ethical habits, it should be taught and training given at all the levels of medical education.

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CONFLICT OF INTEREST

None

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Declared none

AUTHOR CONTRIBUTION

Muhammad Luqman Satti: Idealized and conceptualized the study, manuscript writing, final approval, agreement to be accountable for all aspects of the work

Rafia Irfan: Substantial contribution in aquistion of data, manuscript writing, critical reviewed for intellectual content, final approval, agreement to be accountable for all aspects of the work

Warda Furqan: Substantial contribution in analysis of data and interpretation of data, critical review, final approval, agreement to be accountable for all aspects of the work

Afnan Naeem: Conceptualized the study, critical review, final approval, agreement to be accountable for all aspects of the work

REFERENCES

1. WHO. Report on the burden of endemic health care-associated infection worldwide. Geneva: World Health Organisation; 2011. Available from: https://iris.who.int/bitstream/handle/10665/80135/9789241501507_eng.pdf
2. Harbarth S. Nosocomial transmission of antibiotic-resistant microorganisms. Curr Opin Infect Dis. 2001; 14(4): 437–42.
   DOI https://doi.org/10.1097/00001432-200108000-00007
3. Cosgrove SE. The relationship between antimicrobial resistance and patient outcomes: mortality, length of hospital stay, and health care costs. Clin Infect Dis. 2006; 42(Suppl 2): S82–9.
   DOI: https://doi.org/10.1086/499406
4. Spitale G. COVID-19 and the ethics of quarantine: a lesson from the Eyam plague. Med Health Care Philos. 2020; 23(4): 603-9.
   DOI: https://doi.org/10.1007/s11019-020-09971-2

5. Hussain, Shushauna. 2020. Fear of Coronavirus Fuels Racist Sentiment Targeting Asians. Los Angeles Times, 3 February 2020. Available from: https://www.latimes.com/california/story/2020-02-03/fear-panic-around-the-coronavirus-fuels-racist-sentiment
6. Varkey B. Principles of clinical ethics and their application to practice. Med Princ Pract. 2000; 30(1): 17-28. DOI: https://doi.org/10.1159/000509119
7. Jang JH, Wu S, Kirzner D, Moore C, Youssef G, Tong A, *et al*. Focus group study of hand hygiene practice among healthcare workers in a teaching hospital in Toronto, Canada. Infect Control Hosp Epidemiol. 2010; 31(2): 144–50. DOI: https://doi.org/10.1086/649792
8. Lankford MG, Zembower TR, Trick WE, Hacek DM, Noskin GA, Peterson LR. Influence of role models and hospital design on hand hygiene of healthcare workers. Emerg Infect Dis. 2003;9(2):217–23. DOI: https://doi.org/10.3201/eid0902.020249
9. Quiros D, Lin S, Larson EL. Attitudes toward practice guidelines among intensive care unit personnel: A cross-sectional anonymous survey. Heart Lung. 2007;36(4):287–97. DOI: https://doi.org/10.1016/j.hrtlng.2006.08.005
10. Cantrell D, Shamriz O, Cohen MJ, Stern Z, Block C, Brezis M. Hand hygiene compliance by physicians: marked heterogeneity due to local culture? Am J Infect Control. 2009; 37(4): 301–5. DOI: https://doi.org/10.1016/j.ajic.2008.05.001
11. Temime L, Opatowski L, Pannet Y, Brun-Buisson C, Boelle PY, Guillemot D. Peripatetic health-care workers as potential superspreaders. Proc Natl Acad Sci USA. 2009; 106(43): 18420–5. DOI: https://doi.org/10.1073/pnas.0900974106
12. Hornbeck T, Naylor D, Segre AM, Thomas G, Herman T, Polgreen PM. Using sensor networks to study the effect of peripatetic healthcare workers on the spread of hospital-associated infections. J Infect Dis. 2012; 206(10): 1549–57. DOI: https://doi.org/10.1093/infdis/jis542
13. Braun V, Clarke C. Using thematic analysis in psychology. Qual Res Psychol. 2006; 3: 77–101. DOI: https://doi.org/10.1191/1478088706qp063oa
14. Abbas S, Sultan F. Infection control practices and challenges in Pakistan during the COVID-19 pandemic: A multicentre cross-sectional study. J Infect Prev. 2021; 22(5): 205-211. DOI: https://doi.org/10.1177/17571774211012761
15. Wagenvoort JHT, Gelissen LLGJ, Timpert H. Ethical aspects in infection control (letter). Infect Control Hosp Epidemiol 1997; 18: 304-5. DOI: https://doi.org/10.1086/647615
16. Grayson ML, Macesic N, Huang GK, Bond K, Fletcher J, Gilbert GL, *et al*. Use of an innovative personality-mindset profiling tool to guide culture-change strategies among different healthcare worker groups. PLoS One. 2015; 10(10): e0140509. DOI: https://doi.org/10.1371/journal.pone.0140509
17. Duggan JM, Hensley S, Khuder S, Papadimos TJ, Jacobs L. Inverse correlation between level of professional education and rate of handwashing compliance in a teaching hospital. Infect Control Hosp Epidemiol. 2008; 29(6): 534–8. DOI: https://doi.org/10.1086/588164
18. Raka L. Prevention and control of hospital-related infections in low- and middle-income countries. Open Infect Dis J. 2010; 4: 125-131. DOI: https://doi.org/10.2174/1874279301004010125
19. Sengupta S, Barman P, Lo J. Opportunities to overcome implementation challenges of infection prevention and control in low-middle income countries. Curr Treat Options Infect Dis. 2019; 11: 267–80. DOI: https://doi.org/10.1007/s40506-019-00200-w
20. Naikoba S, Hayward A. The effectiveness of interventions aimed at increasing handwashing in healthcare workers—a systematic review. J Hosp Infect. 2001;47(3):173–80. DOI: https://doi.org/10.1053/jhin.2000.0882
21. WHO Patient Safety. Guide to implementation a guide to the implementation of the WHO multimodal hand hygiene improvement strategy. Geneva; 2009. Available from: https://iris.who.int/bitstream/handle/10665/70030/WHO_IER_PSP_2009.02_eng.pdf?sequence=1