



## Exploring Infection Control Measures Among Healthcare Professionals In A Specialized Hospital Setting In Odisha

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### ABSTRACT

*This research analyzes the infection control practices among health workers of a specialty hospital in the state of Odisha through a mixed-method approach and gathers both quantitative and qualitative data. Altogether, 100 health care workers, 55 doctors, and 45 nurses at different levels were selected to answer the questionnaire that focused on assessing knowledge about hospital-acquired infections, knowledge about the policy governing infection control, and real-life implementation of infection control practice. An infection control audit also took place in six wards of hospitals to see what is in place and put into actual practice. Findings: Although doctors had more knowledge than nurses regarding HAIs, the nurses were found slightly more conscious and followed practically better, although the practicality of infection control practice was enhanced by experience. According to such an audit, knowledge gap and awareness gap remain within the standards of infection control, particularly in PPE availability and environmental cleanliness among a few areas. An existing statistically significant relationship has found between awareness of infection policy and practice of infection controlling. Meaning thus, improvement in this context by enhancing awareness could potentially elevate adherence to infection controlling policies in practice. However, the overall outcome suggests that the practical implementation of infection control measures is still not improving and requires additional efforts in terms of resource allocation and policy enforcement.*

**Keywords:** *Exploring, Infection Control Measures Among, Healthcare Professionals, Specialized Hospital, Odisha, Personal Protective Equipment (PPE), Hospital-Acquired Infections (HAIs).*

### INTRODUCTION:

Infection control is the core element of patient safety and quality care delivery, particularly in hospitals with special conditions because many patients come in complicated conditions

or with compromised immune system states. Healthcare-associated infections expose a patient to high risks that are also a great contributor to extended stay times, more costly treatments, and even increased morbidity rates.

Implementing effective infection control therefore is very critical for this reason. In Odisha, healthcare infrastructure varies across regions; hence, the practices and protocols adopted by healthcare professionals in specialized hospitals deserve thorough investigation to understand their effectiveness and areas for improvement.

Healthcare professionals, who are directly involved in patient care and the frontline implementors of hygiene and sanitation measures, practice IPC. Despite established guidelines from organizations like the World Health Organization and the Centers for Disease Control and Prevention, adherence to these measures primarily depends on institutional culture, training, and resource availability. Unique to the specialized hospitals of Odisha may include: resource constraint and variability in knowledge on IPC among healthcare workers leading to higher ratios of patient to staff.

The purpose of this research will be to investigate infection control practices among healthcare professionals in the specialty hospital setting of Odisha. It focuses on determining the extent to which existing protocols are adhered to, problems experienced in effective implementation, and the effect on rates of infection. Areas of inquiry will involve hand hygiene practices, use of personal protective equipment, sterilization techniques, waste management

protocols, and surveillance systems. Given that this understanding is the basis, this research study will provide insight into the present status of IPC measures and give recommendations for its improvement.

This adds a further dimension to this study: the geographical and cultural setting of Odisha, mixing urban and rural populations. Patient demographics and community health practices, therefore, affect the dynamics of infection control measures. Moreover, the specialty hospitals in Odisha primarily cater to diverse medical specializations from oncology and cardiology to infectious diseases, each with its unique challenges. For example, infection control in the oncology wards is of particular concern because the patient has been immunosuppressed by chemotherapy. The surgical wards also require very high levels of sterilization to avoid infections post-surgery.

#### LITERATURE REVIEW:

**Nag et al. (2018)** investigated the knowledge, attitudes, and practices of medical staff in a Tripuran tertiary care hospital regarding hospital-acquired infections (HAIs). Findings concluded that though health care professionals had a fairly good idea about HAIs, practice gaps existed between the perception and actual practice of the infection prevention and control activities. The study focused on implementing targeted interventions by

education and continuous awareness programs to ensure improvement in infection control practices. The authors came to the conclusion that augmenting infection control measures and KAP among healthcare staff can very significantly reduce the incidence of HAIs in hospitals.

**Ohannessian et al. (2018)** investigated, using a time-dependent multistate model, extra length of stay attributable to hospital-acquired infections in adult intensive care units; their findings illustrated that, indeed, HAI can significantly prolong duration of stays in the hospitals and heavily impact patient outcome and available healthcare resources. This study conducted a multistate model to estimate the length of stay in hospitals before and after the onset of the HAIs, giving considerable insight into the burden it imposes on the management of the ICU. The importance of early detection and preventive measures to minimize the impact imposed by HAIs on patients staying in the ICU was discussed.

**Pati et al. (2020)** examined the health care utilization and burden of individuals attending both public and private primary care centers in Odisha, India, as well as the variables contributing to their multimorbidity. In this study, a higher proportion of multimorbidity is found among patients attending public than private health care centers. These patients used health

care more often than the latter because of a greater burden of chronic conditions at public centers. Factors which determine the prevalence of multimorbidity and healthcare utilization pattern are socioeconomic and access factors according to the research. Based on the findings, policy changes were required in dealing with these inequalities in providing care and improving health services especially within the public sector.

**Rohini and Balachandran (2022)** evaluated the challenges faced and insights gained by Indian nursing staff during the COVID-19 epidemic through the use of qualitative content analysis. This study revealed that nursing professionals have encountered numerous challenges, including inadequate PPE, emotional stress, and extreme workload during the crisis. However, despite such challenges, nursing staff manifested resilience, adaptability, and innovation in care delivery. In these articles, the writers emphasized mental health provision for doctors and much preparedness in health crises and related emergencies in future. They proposed better training, along with resource provision and enhancements in mental health care towards the same crisis.

**Vesel et al. (2023)** explored the factors that support or hinder breastfeeding for babies born with low birth weight in a qualitative study that took place in Tanzania, Malawi, and

India. The findings were the existence of many barriers among others, including inadequate infrastructures in the healthcare arena, maternal stress, and the presence of socio-economic factors instead of cultural beliefs, support by family members, or other healthcare services as it stands out as the strongest facilitator of breastfeeding. It pointed out some key influencers: health providers and community leaders who play an important role in the promotion of breastfeeding. Context-specific interventions should be adopted, the authors recommended, in order to overcome barriers to and enhance breastfeeding practice among mothers of low birth weight infants.

**Yip et al. (2022)** performed a detailed analysis of health system performance in Odisha, India, focusing on core variables impacting the health service, which is equitable and sound in quality. In this mixed-method approach for the appraisal of health service delivery, he established the overall weaknesses and strengths of healthcare service delivery in Odisha State. There has been noted progress in the state of Odisha towards improvement in access to health services, although infrastructure, available human resources, and other forms of constraints are still far from being adequate. It was recommended that the state increase investment in healthcare infrastructure and resource allocation, improve the training of healthcare

workers in a multi-faceted approach to enhance health system performance and equity.

#### **RESEARCH METHODOLOGY:**

This research uses a mixed-methods strategy, meaning it draws from both quantitative and qualitative sources. The prime data was collected through structured questionnaires distributed to all health care workers, starting from doctors to nurses at different experiences working in a specialized hospital located in Odisha. The primary questionnaire was prepared to elicit the knowledge, awareness, and practical implementation regarding the infection control measures implemented among the health care workers. In addition, an infection control audit was performed in six wards of a hospital to assess the adherence in practice with standards.

#### **1. Data Collection:**

The data collection process involved canvassing 100 healthcare professionals whereby 55 doctors and 45 nurses participated. The surveyed participants were grouped according to professional status and experience in care, divided into three categories: less than 5 years, 5-10 years, and over 10 years of experience. The questionnaire consisted of three major components: (1) Knowledge on HAIs, (2) Infection control policy awareness, and (3) Practice of infection control measures. Each of these was scored to reflect

understanding and compliance with infection control procedures. The audit, through observation, furnished direct information on infection control in the wards regarding the presence of PPE, isolation methods, and hygiene.

## **2. Data Analysis:**

Descriptive and inferential statistical methods were applied for data analysis. Calculations of mean scores and percentage scores have been used for each respondent group based on role and experience. Mean scores by sections, such as knowledge, awareness, and practice, were calculated and then compared between doctors and nurses, including experience categories. Knowledge, awareness, and practice scores were compared to audit scores for each ward using inferential statistics like Spearman's correlation coefficient. Testing for correlations between the various variables was done for statistical significance.

## **DATA ANALYSIS AND RESULTS:**

The data presented provides the in-depth analysis of health care workers' knowledge, awareness, and practice about infection control measures across respondent characteristics. It shows doctors generally have better knowledge related to hospital-acquired infections than nurses, but, on the other hand, nurses tend to possess slightly higher awareness and adherence to infection control policies and measures in

practice. It enhances the knowledge of experience, especially that involving more than 10 years of experience, and yields scores that are higher on the parts of awareness and knowledge sections. Experience did not greatly influence the practical application of infection control measures as there was a consistency of the scores across all the ranges of experience. Overall results reflect that awareness is high, but knowledge about infection control measures is moderate. Practical application of the measures was not consistent at all times. An audit of infection control standards in wards revealed that, although the level of awareness and knowledge about infection control was high, actual implementation of the practices was suboptimal because of issues such as personal protective equipment and environmental cleanliness. Correlations between knowledge, awareness, and practice scores with ward audit scores were weak and not statistically significant. This indicates a gap in the theoretical understanding of healthcare workers and the practical application of infection control measures. However, a correlation between infection control policies and practice adherence was discovered, suggesting that increased awareness could be linked to improved practice adherence to infection control measures.

**1. Information about infections acquired in hospitals:**

Table 1 displays a sample of 100 knowledge scores on the questionnaire's hospital-acquired infection part, categorized by the characteristics of the respondents. By role, doctors with n = 55 scored more with an average score of 7.10 or 77.3%, compared to their counterparts with the n = 45 average score that was at 6.36 or 67.0% suggesting doctors were better-off in terms of knowledge than hospital-acquired infections. In terms of experience, respondents with less than 5 years of experience (n = 55) had a mean score of 6.71 (72.5%), while those having 5-10 years (n = 45) and above 10 years of experience (n = 45) had higher

mean scores of 6.94 (75.3%) and 6.81 (73.8%) respectively, and it indicated that moderate experience might go with slightly high knowledge level. In general, the total mean score was 6.77, with 73.2%, showing a moderate level of knowledge across all participants, with doctors scoring higher than nurses and those with more experience having slightly better knowledge about hospital-acquired infections. These results indicate that both role and experience in health care contribute to the level of risk-related knowledge of infections at hospitals, although the relationship between experience and knowledge was not statistically significant (Table 1).

**Table 1:** Scores on the questionnaire's part on hospital-acquired infection knowledge.

<b>Respondent Characteristic</b>	<b>Mean Score (n)</b>	<b>Mean Percentage Score (%)</b>
<b>Role</b>		
Doctor (n = 55)	7.10*	77.3
Nurse (n = 45)	6.36	67.0
<b>Experience in Role</b>		
Less than 5 years (n = 55)	6.71	72.5
5-10 years (n = 45)	6.94	75.3
Over 10 years (n = 45)	6.81	73.8
<b>Total (n = 100)</b>	6.77	73.2

**2. Awareness of infection control policies:**

The table 2 shows the scores concerning infection control policies awareness as stated in the questionnaire of respondents with a total of sample size 100 respondents. In terms of a role, nurses n= 45 had a small

rise in mean score: at 10.96 scored on 83.61%. Doctors, n=55 scored a mean on 10.81 at a proportion of 82.56%, meaning that, on average nurses outperform doctors with good scores on infection control policies. With respect to experience in role, the respondents who had more than 10 years of

experience scored the highest mean score at 11.45 (87.11%), indicating that the more experienced, the better understanding of infection control policies. In turn, those with less than 5 years (n = 55) and 5-10 years of experience (n = 45) had a mean score of 10.75 (81.11%) and 10.69 (81.6%), respectively, indicating while knowledge is high across the board, the

greatest awareness occurs in those with more than 10 years of experience. The overall mean score for the total sample was 10.88 (83.2%), which suggests a high awareness of infection control policies among the healthcare staff, with slightly better scores for nurses and those with more experience. This generally indicates that knowledge is enhanced by experience. (Table 2).

**Table 2:** Scores on the questionnaire's part on infection control policy awareness.

Respondent Characteristic	Mean Score (n=12)	Mean Percentage Score (%)
<b>Role</b>		
Doctor (n = 55)	10.81	82.56
Nurse (n = 45)	10.96	83.61
<b>Experience in Role</b>		
Less than 5 years (n = 55)	10.75	81.11
5-10 years (n = 45)	10.69	81.6
Over 10 years (n = 45)	11.45*	87.11
<b>Total (n = 100)</b>	10.88	83.2

**3. Practice of infection control measures:**

Table 3 shows the results of the questionnaire's practice of infection control measures section for a total sample size of 100 respondents. On role, nurses (n = 45) scored a mean of 11.36 (80.8%) while doctors (n = 55) had a mean score of 10.56 (74.6%), which implies that nurses show better practical implementation of infection control measures than doctors. Regarding the role experience, for respondents with less than 5 years of experience, n = 55, mean score was 10.0, 77.1%, whereas for respondents with 5-10 years of experience, n = 45, and over

10 years of experience, n = 45, the mean scores were 10.77, 76.2%, and 10.81, 76.5%, respectively. These scores suggest that experience did not impact the practice of infection control measures on the job, as the scores were fairly consistent across the different experience levels. The mean score of the total sample was 10.92 (77.4%), indicating a fair overall practice of infection control measures, where nurses seem to be slightly better at this than doctors, yet no significant differences across levels of experience. This shows the significance of role in infection control practice, with nurses being more involved in the

implementation of such measures. No discernible variations in ratings were found in this area between respondents

who had held different positions for different lengths of time or between physicians and nurses (Table 3).

**Table 3:** Scores on the questionnaire's section on infection control measures.

Respondent Characteristic	Mean Score (n=13)	Mean Percentage Score (%)
<b>Role</b>		
Doctor (n = 55)	10.56	74.6
Nurse (n = 45)	11.36	80.8
<b>Experience in Role</b>		
Less than 5 years (n = 55)	10.0	77.10
5-10 years (n = 45)	10.77	76.2
Over 10 years (n = 45)	10.81	76.5
<b>Total (n = 100)</b>	10.92	77.4

Neither the respondents' knowledge ratings nor their practice of infection control strategies were substantially correlated with the hospital-acquired infection section. A lack of association between knowledge and section scores on awareness of infection control regulations was also noted. Nonetheless, adherence to infection control procedures and respondents' knowledge of infection control regulations were statistically significantly correlated (P=0.05).

**4. Infection control audit:**

Just two of the six wards that were examined had infection control standards rated as "very good," according to the audits; the other four wards earned "good" ratings. Personal protective equipment was scarce in each of the six wards. Financial constraints and an inadequate supply of gloves, particularly in wards where staff members had a latex allergy, were some

of the variables that may have led to these issues. Scores for environmental cleanliness and infected person isolation were also below optimal in the four wards that were deemed to have adequate infection control. The ward audit score and respondents' knowledge of hospital-acquired infections and infection control procedures were shown to be positively correlated (Spearman's coefficients of 0.119 and 0.197, respectively). On the other hand, there was a negative correlation between the respondents' ward audit ratings and their performance on the practice component of infection control measures (Spearman's coefficient = -0.069). Nevertheless, none of these were statistically significant.

**CONCLUSION:**

This study emphasizes that there is a crucial requirement to bridge the gap that exists between knowledge,

awareness, and the practical implementation of infection control measures in a specialty hospital setting in Odisha. Although healthcare professionals, such as doctors, had better knowledge about HAIs, and were highly aware of policies related to infection control, a lack of consistency was observed in terms of actual application. Despite slightly better practical adherence to infection control practices, nurses still had a lot to contend with because of a lack of resources, such as PPE and suboptimal environmental cleanliness. Audit findings and weak correlation between knowledge, awareness, and practice show that knowledge alone is not a good indicator of successful implementation. There is a strong association between awareness and practice, so that interventions which can improve the former are likely to influence adherence positively. However, such improvements in significant ways can be realized only if efforts target knowledge gaps and practical resource constraints alike. In addition, the study also calls for stronger policy enforcement and better resource allocation along with continuous monitoring to ensure infection control measures are understood as well as practiced effectively across levels of healthcare staff for effective safeguarding of patient health and reduction of hospital-acquired infections.

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