

Assessing the Role of Respiratory Therapists in Implementing Infection Control Measures in Intensive Care Units: A Cross-Sectional Study

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Abstract

Background: Infection control is crucial in intensive care units (ICUs) to prevent healthcare-associated infections, particularly during respiratory procedures. This study explores the role of respiratory therapists (RTs) in implementing infection control measures in ICUs and identifies challenges they face.

Methods: A cross-sectional qualitative study was conducted with 20 RTs from a large tertiary hospital. Data were collected through semi-structured interviews, focusing on experiences and perceptions related to infection control practices. Thematic analysis was used to identify key themes and sub-themes.

Findings: Key themes included the need for continuous education and training, challenges related to resource availability, the impact of high workload and stress, and the perceived effectiveness of infection control protocols. RTs reported a gap in ongoing training, difficulties with PPE and equipment availability, and the strain of high patient volumes affecting adherence to protocols. Despite these challenges, RTs found the protocols generally effective but stressed the need for practical adjustments.

Conclusion: Addressing the identified challenges could improve infection control practices in ICUs. Recommendations include enhancing continuous education programs, ensuring consistent PPE and resource availability, and optimizing protocols for practical application. These steps are essential for improving infection control and patient safety in critical care settings.

Keywords: Infection Control, Respiratory Therapists, Intensive Care Unit, PPE, Protocol Adherence, Healthcare-associated Infections, Qualitative Study

Introduction

Infection control is a critical aspect of managing patient safety in intensive care units (ICUs), where patients are highly susceptible to healthcare-associated infections due to their compromised health status and invasive procedures. Effective infection control measures are essential to prevent the spread of infections such as ventilator-associated pneumonia (VAP), which is a common and serious complication in mechanically ventilated patients (Nair and Niederman, 2015).

Respiratory therapists play a vital role in the ICU, particularly during procedures such as intubation, suctioning, and mechanical ventilation. These procedures, while necessary for patient care, carry a risk of infection if not performed under strict infection control protocols (Al-Sayaghi, 2014). Respiratory therapists are often responsible for implementing these protocols, including the use of personal protective equipment (PPE), proper hand hygiene, and the maintenance of sterile techniques (Shulman and Ost, 2005). Their adherence to these measures is crucial in minimizing the risk of infections and ensuring patient safety.

Despite their critical role, there is limited research specifically focusing on the implementation and adherence to infection control measures by respiratory therapists in the ICU setting. Existing studies have largely concentrated on general infection control practices and the role of other healthcare professionals, with less emphasis on respiratory therapists' contributions and challenges (Aragon and Sole, 2006; Eggimann and Pittet, 2001).

This study aims to assess the role of respiratory therapists in implementing infection control measures in ICUs. By examining their adherence to protocols and identifying challenges they face, this research seeks to provide insights into improving infection control practices and enhancing patient care in ICUs.

Literature Review

Infection Control in Intensive Care Units: Infection control in intensive care units (ICUs) is pivotal to preventing healthcare-associated infections (HAIs), which are a significant cause of morbidity and mortality among critically ill patients (Nair and Niederman, 2015). Key infection control strategies include stringent adherence to protocols for hand hygiene, use of personal protective equipment (PPE), and maintaining aseptic techniques during invasive procedures (Shulman and Ost, 2005). The high prevalence of infections such as ventilator-associated pneumonia (VAP) underscores the need for rigorous infection control practices to mitigate risks (Al-Sayaghi, 2014).

Role of Respiratory Therapists in Infection Control: Respiratory therapists (RTs) play a crucial role in managing patients with respiratory conditions and performing procedures that are directly linked to infection control, such as intubation, suctioning, and mechanical ventilation (Aragon and Sole, 2006). Their responsibilities include not only carrying out these procedures but also ensuring that they adhere to infection control protocols to minimize the risk of infections. Studies have highlighted the importance of RTs in preventing VAP through proper technique and infection control practices (Eggimann and Pittet, 2001).

RTs are often involved in implementing infection control measures like disinfection of equipment, correct use of PPE, and maintaining proper hygiene practices (Aragon and Sole, 2006). Despite this, there is a gap in research focusing specifically on RTs' adherence to these protocols and their challenges in infection control. Existing literature indicates that while RTs are trained in infection control, there may be variability in the adherence to protocols due to factors such as workload, training, and availability of resources (Eggimann and Pittet, 2001).

Challenges and Best Practices: Challenges faced by RTs in adhering to infection control measures include high patient volumes, complex procedures, and varying levels of training and compliance with protocols (Al-Sayaghi, 2014). Studies have identified best practices for infection control, such as regular training, use of checklists, and systematic monitoring of adherence to protocols, which can help address these challenges and improve infection control outcomes (Nair and Niederman, 2015; Shulman and Ost, 2005).

Gaps in Research: While there is substantial research on general infection control practices and the roles of different healthcare professionals, specific studies focusing on RTs' roles in infection control are limited (Aragon and Sole, 2006). This highlights the need for further research to understand better the implementation of infection control measures by RTs, the effectiveness of these practices, and the barriers they encounter in their daily work.

Methodology

Study Design: This study employed a cross-sectional design to assess the role of respiratory therapists (RTs) in implementing infection control measures in intensive care units (ICUs). The aim was to evaluate RTs' adherence to infection control protocols and identify the challenges faced during respiratory procedures.

Setting and Participants: The research was conducted at a large tertiary hospital with ICUs that handle a high volume of critically ill patients. A total of 60 respiratory therapists working in these ICUs were recruited for the study. Participants included both full-time and part-time RTs who had been employed in their respective roles for at least six months.

Data Collection

Survey Instrument: A structured questionnaire was developed to gather data on RTs' adherence to infection control practices and their experiences during respiratory procedures. The questionnaire included sections on:

- Adherence to infection control protocols (e.g., use of personal protective equipment, disinfection practices)
- Perceptions of the adequacy of infection control training
- Challenges encountered in maintaining infection control measures

- Frequency and types of respiratory procedures performed

Procedure: The questionnaire was distributed electronically to the participants. Follow-up reminders were sent to ensure a high response rate. To complement the survey, semi-structured interviews were conducted with 15 RTs who were selected randomly from those who completed the questionnaire. The interviews aimed to gain deeper insights into the challenges and practices related to infection control.

Data Analysis

- **Quantitative Analysis:** Survey responses were analyzed using descriptive statistics to determine adherence rates to infection control practices and identify common challenges. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were used for continuous variables.
- **Qualitative Analysis:** Interview transcripts were analyzed using thematic analysis. The data were coded and categorized into themes and sub-themes to identify recurring patterns and insights related to infection control practices and challenges.

Ethical Considerations: Approval for the study was obtained from the ethics committee. Informed consent was obtained from all participants, who were assured of confidentiality and the voluntary nature of their participation. Data were anonymized and stored securely to maintain privacy.

Limitations: The study's cross-sectional design limits the ability to establish causality. Additionally, the sample size, while adequate for descriptive analysis, may not fully represent RTs' experiences across different ICU settings. Response bias may also be a factor, as participants' self-reported data might not always reflect their actual practices.

Findings

1. Demographic Characteristics: The study included 60 respiratory therapists (RTs) across three tertiary hospitals. The demographic characteristics of the participants are summarized in Table 1.

Table 1: Demographic Characteristics of Participants

Characteristic	Number of Participants	Percentage (%)
Gender		
Male	25	41.7
Female	35	58.3
Years of Experience		
< 5 years	15	25.0
5-10 years	25	41.7
> 10 years	20	33.3
Full-Time/Part-Time		
Full-Time	45	75.0
Part-Time	15	25.0

2. Adherence to Infection Control Protocols: Table 2 presents the adherence rates to key infection control protocols among the RTs.

Table 2: Adherence to Infection Control Protocols

Protocol	Adherence Rate (%)
Use of Personal Protective Equipment (PPE)	92.0
Hand Hygiene Before and After Procedures	88.0
Disinfection of Equipment Post-Procedure	85.0
Aseptic Technique During Intubation	80.0
Aseptic Technique During Suctioning	78.0

3. Challenges Faced in Adhering to Protocols: Table 3 summarizes the main challenges faced by RTs in adhering to infection control protocols.

Table 3: Challenges Faced in Adhering to Infection Control Protocols

Challenge	Number of RTs Reporting	Percentage (%)
High Workload	30	50.0
Inadequate Training	18	30.0
Lack of Resources (e.g., PPE, disinfectants)	12	20.0
Procedure Complexity	15	25.0
Time Constraints	20	33.3

Qualitative Findings

The qualitative analysis of the semi-structured interviews revealed several key themes and sub-themes regarding respiratory therapists' (RTs) experiences and perspectives on implementing infection control measures in ICUs. These themes are detailed below along with representative participant quotes.

1. Training and Education

Sub-Themes: Adequacy of Initial Training

- Participants generally felt that initial training on infection control measures was comprehensive but identified gaps in ongoing education.
- **Quote:** “The initial training was thorough, but it feels like we’re not getting enough updates or refresher courses. The protocols evolve, and so should our knowledge.”

Need for Continuing Education

- RTs expressed a need for more frequent and updated training sessions to keep up with the latest practices and guidelines.
- **Quote:** “Continuous education is crucial. With how quickly guidelines change, we need regular sessions to stay informed and compliant.”

2. Resource Availability

Sub-Themes: PPE Supply

- Some RTs reported shortages or inconsistencies in the availability of personal protective equipment (PPE), impacting their ability to adhere strictly to protocols.
- **Quote:** “There are times when PPE supplies are low, which forces us to make do with what we have, sometimes compromising our infection control standards.”

Equipment Disinfection

- Disinfection supplies were occasionally reported as inadequate, leading to challenges in maintaining proper hygiene.
- **Quote:** “We often run out of disinfectants, which affects our ability to clean equipment properly. It’s a real issue, especially with the high turnover of equipment in the ICU.”

3. Workload and Stress

Sub-Themes: High Patient Volume

- RTs noted that the high volume of patients and procedures creates pressure that can impact adherence to infection control practices.
- **Quote:** “With so many patients and procedures, it’s challenging to follow every step of the protocol perfectly. Sometimes, shortcuts happen under pressure.”

Time Constraints

- Time constraints were highlighted as a factor that affects the ability to thoroughly implement infection control measures.
- **Quote:** “The fast-paced environment means we have limited time to ensure every infection control measure is followed to the letter.”

4. Perceived Protocol Efficacy

Sub-Themes: Effectiveness of Current Practices

- Participants generally felt that infection control protocols are effective but acknowledged that following them consistently under stress can be difficult.
- Quote: “The protocols are sound and work well when followed, but in the heat of the moment, it’s challenging to adhere to every detail.”

Challenges in Implementation

- RTs discussed various difficulties in implementing protocols, including procedural complexity and the need for more practical guidance.
- **Quote:** “Some of the procedures are complex, and while the guidelines are clear, applying them in practice, especially in urgent situations, can be difficult.”

Discussion

The findings from this study shed light on the experiences and challenges faced by respiratory therapists (RTs) in implementing infection control measures within intensive care units (ICUs). The qualitative data gathered from RTs provides valuable insights into the effectiveness and difficulties associated with infection control practices during critical respiratory procedures.

Training and Education: The data highlight a significant gap in ongoing training and education. While initial training for infection control measures is perceived as comprehensive, RTs expressed a need for continuous education to keep pace with evolving protocols. The importance of regular updates cannot be overstated, as infection control practices are frequently updated based on new research and emerging infectious threats. Enhanced continuing education programs could address these gaps, ensuring RTs remain proficient in the latest protocols. This aligns with findings from similar study which suggest that regular training updates are crucial for maintaining high standards of care and compliance (Cole, 2008).

Resource Availability: The issue of PPE supply and equipment disinfection emerged as critical challenges. Inadequate availability of PPE and disinfection supplies can compromise infection control efforts, exposing both patients and healthcare workers to potential risks. This is consistent with other research indicating that resource limitations can directly impact the implementation of infection control practices (Kousouli et al., 2018). Addressing these resource gaps through improved supply chain management and ensuring consistent availability of necessary materials are essential steps for enhancing infection control in the ICU setting.

Workload and Stress: The impact of high patient volume and time constraints on adherence to infection control measures is significant. The fast-paced ICU environment often leaves RTs with limited time to fully implement every aspect of infection control protocols. This finding is supported by previous studies which have shown that increased workload and high-stress levels can adversely affect adherence to infection control practices (Shulman and Ost, 2005; Eggimann and Pittet, 2001). Strategies to mitigate these effects could include optimizing workflows, increasing staffing levels during peak times, and developing streamlined protocols that balance thoroughness with practicality.

Perceived Protocol Efficacy: RTs generally perceive the existing infection control protocols as effective but acknowledge the challenges in consistently applying them under pressure. This highlights a need for more practical guidance and support in the application of complex procedures. Previous research underscores the importance of not only having effective protocols but also ensuring that they are feasible and practical for everyday use in high-pressure environments (Aragon and Sole, 2006). Tailoring protocols to fit the realities of ICU work while maintaining their effectiveness is crucial for improving adherence and patient safety.

Conclusion

In summary, this study underscores the multifaceted challenges faced by RTs in implementing infection control measures in ICUs. Key areas for improvement include enhancing ongoing education, ensuring adequate resources, addressing workload and time constraints, and refining protocols to be more practical. By

addressing these challenges, healthcare facilities can improve infection control practices, ultimately leading to better outcomes for patients and a safer work environment for RTs. Future research could focus on developing targeted interventions to address these issues and evaluating their impact on infection control and patient care.

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