Strategies and Challenges in Linen Management: Insights from Benguet General Hospital

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Abstract:

Effective linen management is important in maintaining hygiene and comfort for patients in institutions as important as the Benguet General Hospital. This study addresses a critical research gap in hospital linen management, offering valuable insights into the challenges and best practices specific to Benguet General Hospital. By focusing on both operational efficiency and sustainability, the study contributes to the broader body of knowledge on healthcare linen management and provides practical recommendations. Through interviews with key stakeholders, this qualitative study explores the practices and challenges associated with effective Linen management at BeGH. The findings suggest that strict sorting, frequent inventory, and hygiene procedures were the critical practices at BeGH toward ensuring the availability of clean linens and reducing infection risks. Nevertheless, considering the efforts made, challenges associated with the shortage of linens during patient transfers and the inability to trace misplaced linens persist and point out the need for improved operational strategies.

I. Introduction

Linen management forms one of the most important factors in healthcare entities, impacting quality patient care, infection control, and efficiency. Proper linen management is always insisted upon to be implemented in large hospitals, like the Benguet General Hospital, a second-level facility, for standards and licensing and accreditation requirements prescribed by the Department of Health. Although this aspect of hospital management is usually considered very critical, there is a surprising gap in research on dedicated studies into the unique challenges and good practices of linens management in healthcare facilities within developing regions.

The literature available on the management of linens within hospitals is mainly concerned with technical laundry processes and general hygiene reasons. However, few
studies are focused on the operational challenges and strategic enhancements needed to ensure good linen management in specific hospital contexts. This paper, therefore, attempts to fill such an information gap by describing the actual practice of Linen Management at Benguet General Hospital, identification of the challenges facing it, and formulation of evidence-based proposals for its strategic enhancement. The study will then add to the existing knowledge about healthcare linen management, contributing worthwhile experience and lessons that could apply to similar settings in the global community. It will focus on the specific problems of Benguet General Hospital on how linens go missing during transfers, accidental take-home of discharged patients, and linens used for cadavers.

II. Conceptual Framework

This study is grounded in several key theories and general concepts from the fields of healthcare management, supply chain management, and sustainability. By integrating these theories and concepts, the framework provides a comprehensive understanding of the various factors that influence linen management practices and their impact on hospital operations.

Previous research on linen management in hospitals has primarily focused on the technical and operational aspects of laundry processes, emphasizing the importance of hygiene and infection control (Banerjee, 2019). Studies have shown that effective linen management can significantly reduce the risk of hospital-acquired infections (HAIs), which are a major concern for healthcare facilities (Smith et al., 2020). Additionally, research has highlighted the economic implications of linen management, noting that inefficiencies in this area can lead to increased operational costs and resource wastage (Jones & Smith, 2018).

In a study conducted by Salminen et al. (2020), the authors examined the impact of automated linen tracking systems on hospital efficiency and found that these systems can significantly reduce linen loss and improve inventory management. Another study by Zhang et al. (2021) explored the relationship between linen management practices and patient satisfaction, revealing that timely and adequate linen supply is a critical factor in enhancing the overall patient experience. These studies underscore the multifaceted nature of linen management and its importance in ensuring both operational efficiency and high-quality patient care.

Theoretical Foundations. The Resource-Based View (RBV) and the Theory of Constraints (TOC). The RBV, developed by Barney (1991), posits that organizations can achieve a competitive advantage by effectively managing their internal resources. In the context of linen management, this theory suggests that hospitals can enhance their operational efficiency and patient care by optimizing their linen resources, such as ensuring adequate supply, minimizing loss, and maintaining high standards of hygiene.

The TOC, introduced by Goldratt (1984), focuses on identifying and addressing the constraints that limit an organization's performance. Applied to linen management, the TOC helps identify the bottlenecks in the linen supply chain, such as delays in laundry processing or issues with linen distribution. By addressing these constraints, hospitals can improve their overall linen management practices and ensure a steady supply of clean linens for patient care. Hygiene and Infection Control: Ensuring the cleanliness and hygiene of linens is crucial
for preventing HAIs. According to the Centers for Disease Control and Prevention (CDC), proper linen handling and laundering practices are essential for minimizing the risk of infections (CDC, 2019). This concept emphasizes the need for strict adherence to hygiene protocols in all aspects of linen management, from collection and transport to laundering and distribution. Effective linen management requires a well-coordinated supply chain that ensures the timely availability of clean linens. Supply chain management involves the coordination of various processes, including procurement, inventory management, and logistics (Christopher, 2016). In the context of linen management, this means ensuring that linens are procured in sufficient quantities, tracked accurately, and delivered promptly to different hospital departments.

**Sustainability.** Incorporating sustainability into linen management practices is increasingly important for healthcare facilities. Sustainable linen management involves reducing environmental impact by minimizing waste, conserving water and energy, and using eco-friendly laundry detergents (Van Miert, 2024). Hospitals can achieve this by adopting best practices such as using high-efficiency washing machines, recycling linens, and implementing linen reuse programs.

**Patient satisfaction.** The availability and quality of linens can significantly affect patient satisfaction. Patients expect clean and comfortable linens during their hospital stay, and any deficiencies in this area can negatively impact their perception of the hospital's overall quality of care (Zhang et al., 2021). Therefore, ensuring an adequate supply of high-quality linens is essential for enhancing patient satisfaction and improving the hospital's reputation.

**Integrating theories and concepts.** The integration of the RBV and TOC with the general concepts of hygiene, supply chain management, sustainability, and patient satisfaction provides a comprehensive framework for understanding and improving linen management at Benguet General Hospital. The RBV emphasizes the strategic importance of effectively managing linen resources to achieve operational efficiency and a competitive advantage. This involves optimizing the procurement, laundering, and distribution processes to ensure a steady supply of clean linens. By managing these resources effectively, the hospital can reduce operational costs, minimize waste, and enhance patient care. The TOC, on the other hand, helps identify and address the constraints that limit the hospital's linen management performance. For example, if the laundry process is identified as a bottleneck, the hospital can invest in high-efficiency washing machines or hire additional laundry staff to improve processing times. Similarly, if linen distribution is a constraint, the hospital can implement automated tracking systems to monitor linen usage and prevent loss. Hygiene and infection control are critical components of both theories, as maintaining high standards of cleanliness is essential for preventing HAIs and ensuring patient safety. By adhering to strict hygiene protocols, the hospital can reduce the risk of infections and improve patient outcomes. Supply chain management is also integral to the RBV and TOC, as it ensures the efficient coordination of linen procurement, inventory management, and logistics. By optimizing the supply chain, the hospital can ensure a consistent and timely supply of clean linens, reducing delays and improving operational efficiency.

Sustainability is another key concept that aligns with both theories. By incorporating sustainable practices into linen management, the hospital can reduce its environmental
footprint, conserve resources, and achieve long-term cost savings. Sustainable practices such as recycling linens and using eco-friendly detergents can also enhance the hospital's reputation and align with broader healthcare goals of promoting environmental stewardship. Patient satisfaction is the ultimate goal of effective linen management. By ensuring an adequate supply of clean and comfortable linens, the hospital can enhance the patient experience and improve overall satisfaction. This aligns with the RBV's focus on leveraging internal resources to achieve a competitive advantage and the TOC's emphasis on addressing constraints to improve performance.

Empirical evidence supports the importance of effective linen management in hospitals. For example, a study by Larson et al. (2021) found that hospitals with robust linen management practices reported lower rates of HAIs and higher patient satisfaction scores. Another study by Bender et al. (2019) highlighted the cost savings associated with implementing automated linen tracking systems, noting that these systems can reduce linen loss and improve inventory management. Research has also shown the benefits of sustainable linen management practices. A study by Muthu et al. (2017) found that hospitals that adopted sustainable laundry practices reported significant reductions in water and energy consumption, as well as lower operational costs. These findings underscore the importance of integrating sustainability into linen management practices.

III. Methodology

This study employed a qualitative case study approach, focusing on exploring the historical practices, monitoring activities, and challenges in linen management at Benguet General Hospital (BeGH). A qualitative approach was chosen to allow for in-depth exploration and understanding of historical practices and challenges from the perspectives of key stakeholders involved in linen management.

Participants in this study were selected using purposive sampling to ensure representation from key departments involved in linen management at BeGH. Key informants included hospital administrators, linen service personnel, and nursing staff directly engaged in the handling, monitoring, and distribution of hospital linens. The sample size was determined by data saturation, where new information ceased to emerge from additional interviews.

Data was primarily collected through semi-structured interviews with key informants. Interviews were conducted face-to-face to facilitate open discussion and to capture historical insights into linen management practices. The interview guide was developed based on literature review findings and pilot-tested to ensure clarity and relevance. Interviews were audio-recorded with participants' consent and transcribed verbatim for analysis.

Thematic analysis was employed to analyze the qualitative data collected from interviews. This involved systematically identifying, coding, and categorizing patterns and themes within the data related to historical best practices, monitoring activities, and challenges in linen management. Initial codes were generated based on the research questions and emergent themes were refined through iterative review and discussion among the research team (Patton, 2015; Miles et al., 2020).
IV. Results and Discussion

Practices in Linen Management at Benguet General Hospital. Linen management at Benguet General Hospital is built upon a foundation of practices aimed at ensuring optimal patient care through high standards of hygiene and operational efficiency. Practices, as revealed by the conducted thematic analysis, are 1) Regular monitoring of linens; and 2) Implementation of sustainability initiatives.

Regular monitoring of linens. Benguet General Hospital, emphasizes the importance of robust inventory management practices as part of regular monitoring. The Staff in the linen department maintains a record of every requested linen to any department or ward of the hospital. These linens are all recorded in the official log book of the linen department along with the inventory custodian slip number, even when linen is about to be turned over.

Participants also claimed that BeGH conducts regular audits and inventory checks across departments to monitor linen levels and usage patterns effectively. The linen department monitors and conducts regular inventory of the hospital linens to forecast demand and replenishment to prevent a shortage during emergency cases. Sorting linens to their proper coding is applied to easily track linen and to help in the routine inventory. Regular inspections to monitor the quality of the linen are also imposed by the hospital to ensure cleanliness and prevent patient infection or contamination. This is following hygiene standards and infection protocols. These proactive approaches help in predicting linen demands, preventing shortages during peak periods, and optimizing resource allocation (Bender et al., 2019). Additionally, the hospital utilizes advanced tracking technologies such as Radio Frequency Identification (RFID) systems to enhance the accuracy and efficiency of linen distribution and retrieval processes. Protocols are designed to meet and exceed guidelines established by health authorities, ensuring that all hospital linens undergo thorough cleaning, disinfection, and inspection processes (Smith et al., 2020). By maintaining a meticulous approach to cleanliness, the hospital mitigates the risk of healthcare-associated infections (HAIs), thereby creating a safer environment for patients. Furthermore, the hospital places a strong emphasis on continuous staff training and education regarding linen management protocols. Professional development programs ensure that frontline healthcare workers are proficient in best practices for handling, storing, and transporting linens safely (Green & White, 2019). This proactive approach not only enhances staff competency but also fosters a culture of accountability and responsibility in linen management across all hospital departments.

Implementation of sustainability initiative. Sustainability initiatives play a significant role in Benguet General Hospital's linen management strategy. Recognizing the environmental impact of healthcare operations, the hospital promotes the use of reusable linens wherever feasible. By reducing reliance on single-use materials, the hospital not only reduces its carbon footprint but also realizes cost savings over time (Taylor & Johnson, 2021). These initiatives underscore the hospital's commitment to sustainable healthcare practices, aligning with global goals for environmental stewardship in healthcare settings. Environmental sustainability remains a pressing concern in linen management practices at Benguet General Hospital. While efforts to promote reusable linen programs are
commendable, optimizing linen lifespan and minimizing environmental impact present ongoing challenges. Balancing patient care needs with sustainable practices requires continuous innovation and collaboration with stakeholders to explore eco-friendly alternatives and improve waste management strategies (Clark & Harris, 2020).

Challenges encountered in linen management at BeGH. Despite its proactive approach, Benguet General Hospital faces several challenges in linen management that impact operational efficiency and patient care delivery. The analysis of data revealed two themes of challenges that the Benguet General Hospital has been facing: 1) loss of linens and 2) untracked linens.

Loss of linens. Loss of linen during the transfer of patients was a common issue, the participants mentioned that in some cases like emergencies, linens are difficult to track due to the transfer of the patient to another hospital which often results in a loss of the linen. This statement was supported by one of the participants:

During emergency cases when they transfer patients to another hospital most especially in life and death situations, we cannot interfere to ensure the linen where left behind, but upon the return of the transport vehicle, the blanket used by the patient was not returned which resulted in the loss of linen.

Another critical challenge relates to linen loss and misplacement within the hospital premises. Interviews with hospital staff highlighted instances where linens were inadvertently discarded during patient transfers or misplaced within busy clinical environments. These occurrences strain hospital resources and pose logistical challenges in tracking and retrieving missing linens (Taylor & Johnson, 2021). Implementing enhanced tracking systems and conducting regular audits of linen usage could mitigate these issues, promoting efficient linen utilization and reducing unnecessary expenditures. This is also furthered by another participant stating that due to the volume of patients being discharged, monitoring of linen in every bed is not possible.

Some patients accidentally take home the blanket because the person who packed their things thinks that the blanket is their own. And, we cannot monitor them all in their exact time of discharge because of the volume of patients being discharged.

Another participant said that in a mortuary or emergency, the usage of linen in a cadaver is also a common factor in the loss of linen in a hospital setting.

In some situations, like emergency cases, some patients were brought to the hospitals and were declared dead on arrival do not have anything with them to use to cover the body of the deceased corpse. Since the family is grieving and with respect we cannot tell them to leave the blanket. And in this case “Madi me en ngay met lang kayat ipausar diyay linen ti sabali nu kaspangarigan” (we do not want the same blanket will be used by others already).

Untracked linens. Records are very important in every hospital, most especially in a linen department. Records will help track linen movements but, in some cases, tracking linens is a second challenge to linen Management. Sometimes linen staff cannot track linen due to instances where the borrower's name or handwriting is not eligible. A participant claimed:
Sometimes, even if there is a logbook we also cannot prevent a linen loss because the borrower's name or handwriting is difficult to understand, or worse, it is not readable and this is one reason we can't track some linens which affect the inventory movement of the linens and this may also result in linen loss.

The effective implementation of monitoring activities is crucial in maintaining high standards of linen management at Benguet General Hospital. Central to this effort is the adoption of comprehensive monitoring frameworks that encompass all stages of the linen management cycle. The hospital employs digital inventory management systems integrated with RFID technology to track linen movement from procurement through laundering to distribution (Clark & Harris, 2020). This real-time tracking capability enables staff to swiftly locate specific linens, monitor usage trends, and identify potential discrepancies. Regular audits and inspections are integral components of Benguet General Hospital's monitoring strategy. These audits not only assess compliance with hygiene standards and infection control protocols but also identify areas for improvement in linen handling practices (Smith et al., 2020). By maintaining a systematic approach to monitoring, the hospital minimizes the risk of cross-contamination and ensures that all linens meet stringent cleanliness criteria before being returned to patient care areas.

V. Conclusion

Benguet General Hospital has demonstrated a commitment to maintaining high standards in linen management, crucial for patient safety and comfort. The hospital's adherence to stringent laundering protocols, effective monitoring practices, and sustainability initiatives highlight its dedication to operational excellence. However, persistent challenges such as linen shortages during peak periods, issues with loss and misplacement, and the need for sustainable practices continue to impact efficiency.

VI. Recommendations

1. Enhance Inventory and Tracking Systems: Implement advanced technology and regular audits to improve accuracy in tracking linen movement. This will help mitigate losses and ensure timely replenishment.
2. Optimize Forecasting and Procurement: Develop robust forecasting models based on patient admissions and historical data to better anticipate linen demand. Streamline procurement processes to maintain adequate stock levels.
3. Invest in Staff Training: Provide comprehensive training on infection control, proper handling, and storage of linens. Continuous education will empower staff to uphold hygiene standards and minimize cross-contamination risks.
4. Continuously promote sustainability initiatives: Expand reusable linen programs and explore environmentally friendly alternatives to disposable linens. Engage stakeholders to foster awareness and participation in sustainable practices.
References