

Reasons For The Poor Quality Of Linen Items In Public Sector Hospitals And Few Simple Measures To Improve It

Running Title: Linen Poor Quality: Reasons and Measures to Improve

Jitender Sodhi¹, Pankaj Arora², Sidhartha Satpathy³

¹Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi-110029, ² Department of Hospital Administration, Postgraduate Institute of Medical Education and Research, Chandigarh-160012, ³Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi-110029.

Corresponding author: Dr. Pankaj Arora, Associate Professor

Email id: drpa1009@yahoo.co.in

Abstract

Patient scrubs, doctors and staff scrubs, bed linen, sterile packs for Operation Theatres (OTs), and Intensive Care Units (ICUs) are the most familiar linen-based items used in any hospital. Few studies published in this domain establish the direct level of satisfaction associated with the quality of linen provided to a patient during his stay. There are hardly any studies undertaken to evaluate the impact of good quality scrubs on work efficiency, productivity, and impression the doctors and staff have about them. Few simple measures—choosing the right type and quality of linen required for hospital use through customized specifications, quality based stitching, provisioning of dedicated space for stacking of fresh linen items in patient care areas, storage of used and soiled linen in sluice rooms, dedicated training of staff involved in the transport of linen both to and from the laundry, due allocation of time to various steps of the wash process, strengthening of mending process at the level of laundry and adoption of scientific techniques of inventory management could bring a tremendous change in the quality of linen items used and perception regarding the same in a hospital.

Keywords: Linen Quality; Public Sector Hospitals; Patients and Staff Satisfaction

Introduction

Patient scrubs, doctors and staff scrubs, bed linen, sterile packs for Operation Theatres (OTs), and Intensive Care Units (ICUs) are the most familiar linen-based items used in any hospital. Few of these items like sterile packs for OTs and ICUs do not directly come under the staff's personal use and hence escape their lens of

satisfaction. However, doctors, staff, and patients use items like scrubs and bed linen, and therefore their quality gets reported in terms of poor washes, torn pieces, wrinkled linen, and sometimes stained as well [1]. Few studies published in this domain establish the direct level of satisfaction associated with the quality of linen provided to a patient during his stay.[2,3] There are hardly any studies

undertaken to evaluate the impact of good quality scrubs on work efficiency, productivity, and impression the doctors and staff have about them. These aspects are usually not considered while strategizing interventions aimed towards improving the productivity of our staff during work, even though it may be a “hygiene” factor according to Herzberg theory.[4] A common singular perception of users—doctors and staff, about linen items voiced during administrative rounds of patient care areas is that the fabric is of poor quality and wash process is deficient. However, the poor quality of linen items is linked to many dependent variables and requires a holistic view to deal with them. It does start from the purchase of new linen with appropriate specifications—whether that is suitable to the needs of a hospital, in terms of its material, color, texture, and ability to withstand ‘wear and tear’ of hospital use. Traditionally, most public hospitals preferred to use either cotton or blended (cotton plus polyester/nylon etc) textiles in the past, but newer materials and use of finishing agents to make it ‘wrinkle free’ have entered the market in the last couple of decades. However, it doesn’t end there itself. The strength lent to a linen piece with robust and quality-based stitching, strong and durable joints with tie-cords (naada), sewing of buttons, are also important parameters, which are generally not given due consideration. Once purchased and stocked in the linen store of a hospital, the items are distributed to various patient care units as per their demand. In clinical care units like wards, ICUs, and OTs, usually due to lack of dedicated space for their stacking, the linen scrubs get mixed up and lead to a situation where the staff randomly picks up inappropriate sizes for them or whichever is available due to lack of choice at that moment. This stresses the linen item as shorter sizes when worn by someone to whom they do not fit correctly, stretch the woven threads, decrease the

tensile strength and can ultimately tear the cloth.

Similarly, due to lack of appropriate space like sluice rooms in patient care areas, the used scrubs and bed linen are invariably stacked up on the wet floors of washrooms where they are exposed to harmful chemicals. The mixing of cleaning rags with the soiled linen further damages the linen. Additionally, on wet floors of washrooms, their stains get permanent while being in touch with water and moisture. The infected linen is disinfected in patient care areas before it is sent to laundry. Bleach or Sodium Hypochlorite is the commonly used disinfecting agent. Hypochlorite solution is made from the powder and the linen is dipped for about half an hour. However, the powdered chemical leaves specks on the linen if it is not dissolved properly. Furthermore, dipping it in the chemical for longer duration adversely affects the strength of the fabric, and can even make holes.

Linen items are of soft fabric and delicate nature, which must be transported to laundry with care in closed, clean, and covered trolleys. However, that does not happen, and they are pushed into open, unclean trolleys and transported ruthlessly through the hospital's corridors while being taken to the laundry. The linen items are again unloaded with a hard hand and allowed to stay in heaps on the dirty floors at the laundry. The laundry process classically falls into four/five stages—segregation, sluicing (for foul/soiled linen only) washing, hydro-extraction, drying, and calendaring/ironing. In household practice as well, if we closely observe—segregation of linen is a crucial step before a lot is loaded into a washer. The loading of light and white-colored items in a dedicated lot while avoiding their mixing with colored and heavy pieces saves them from the burden of long wash cycles. The step of hydro-extraction, which takes out water from the washed linen, is sensitive

and has to be performed with utmost care. Adequate drying as a step further is essential to expel moisture and wet odor from the pieces and needs to be given sufficient time. However, it is not done for sufficient time, as a result of which the wet odor remains in the washed linen. Calendaring or flat ironing helps smooth out all the wrinkles from dried linen pieces and adds a new lease of life to them. It should ideally be done for all the bed and body linen items.

The scientific inventory control methods at the level of linen store and user areas could play a crucial role in lending sufficient time to the laundry process so that the linen items could go through all stages of the wash cycle with sufficient time. When the drying takes more than the usual time during the rainy season, it becomes crucial to have sufficient linen items in the buffer stock. Similarly, the condemnation cycles of linen have to match with the purchase cycles and their proportionate buffer stock levels in the linen store, which otherwise leads to stress on the laundry to reduce its minimum turnaround time. Though it may sound incredulous, the low inventory may lead to reduction in the life of linen since washed textile will have less time to recover from the laundering process. The mending of linen items at the level of laundry is a process that needs strengthening— as it could significantly weed out the torn pieces from circulation through repair and prolong the life of these items. Transportation of washed, ironed linen pieces to various clinical care units is a step that completes the cycle and requires delicate handling and care. The transport especially if it is from an off-site laundry, needs to be done in clean, closed transport trolleys to prevent inadvertent contamination from dust and dirt and should be undertaken through dedicated routes. [5] A few studies have demonstrated the potential of linen to act as a carrier or source of healthcare associated infection. [6,7] These constitute

the “soft points” of linen handling, which require due care and attention.

Few simple measures— choosing the right type and quality of linen required for hospital use through customized specifications, quality based stitching, provisioning of dedicated space for stacking of fresh linen items in patient care areas, storage of used and soiled linen in sluice rooms, dedicated training of staff involved in the transport of linen both to and from the laundry, due allocation of time to various steps of the wash process, strengthening of mending process at the level of laundry and adoption of scientific techniques of inventory management could bring a tremendous change in the quality of linen items used and perception regarding the same in a hospital.

References

1. Sujith K, Vignesh, Shivakumar, Sharma U, Kumar P N. Study on linen costs and utilisation in a tertiary care hospital. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2016 Nov 1;7(6):1130-1135.
2. Singh D, Qadri G, Kotwal M, Syed A, Jan F. Quality control in linen and laundry service at a tertiary care teaching hospital in India. *Int J Health Sci (Qassim)*. 2009 Jan;3(1):33-44. PMID: 21475509; PMCID: PMC3068780.
3. Sakharkar BM. Role of Hospital in Health Care, Principles of Hospital Administration and Planning, 1st Edition, Jaypee Brother. New Delhi. 1998;1:1–19.
4. Alrawahi S, Sellgren SF, Altouby S, Alwahaibi N, Brommels M. The application of Herzberg's two-factor theory of motivation to job satisfaction in clinical laboratories in Omani hospitals. *Heliyon*. 2020 Sep 6;6(9):e04829. doi: 10.1016/j.heliyon.2020.e04829.

- PMID: 32954029; PMCID: PMC7486437.
5. Background G. Laundry and Bedding. Guidelines for Environmental Infection Control in Health-Care Facilities (2003). <https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/laundry.html> (accessed on 06 Dec 2021).
 6. Duffy J, Harris J, Gade L, Schulster L, Newhouse E, O'Connell H, et al. Mucormycosis outbreak associated with hospital linens. *Pediatr Infect Dis J*. 2014 May;33(5):472-6. doi: 10.1097/INF.0000000000000261. PMID: 24667485.
 7. Sasahara T, Hayashi S, Morisawa Y, Sakihama T, Yoshimura A, Hirai Y. *Bacillus cereus* bacteremia outbreak due to contaminated hospital linens. *Eur J Clin Microbiol Infect Dis* (2011) 30:219–226.