



## QUALITY MANAGEMENT STUDY OF LINEN AND LAUNDRY SERVICE AT A TERTIARY CARE HOSPITAL

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### ABSTRACT

*The quality of health services and achieving the customer satisfaction is an obsession for health institutions, where the customer satisfaction is its focus, and it is always searching for the needs and expectations of the customer, and providing health care and achieving the customer's satisfaction and loyalty to the institution providing this service. In this paper study is made on laundry service such as the clean bedding and clean cloths. This service increases the psychological confidence in the patients. Intern it helps for the hospital for more attraction of the patients. It is also one of the important factors in order to manage patients. A study was carried out on current status of the quality of linen with known standards. This study identified critical areas through intervention in order to increase the patient and staff satisfaction regarding the service of the linen and laundry department.*

*Study was carried out with observation, interview, and questionnaire. The input studied includes physical facilities, man power, materials, equipments and environmental factors.*

### INTRODUCTION:

Hospital management now a days become a patient oriented. It is a well known truth that more number of patients input there gets more hygienic facilities, clean linen good atmosphere, and good patient care. Along with necessary service supportive services and also very important linen and laundry department is a supportive service. The supportive service is also good it attracts the public more. The clean and clear linen develops psychological aspects in positive way in patient [10, 11]. Intern attracts more patients for the hospital.

However in hospital linen ward refers to CT clothing, bed sheets, blankets, pillow covers, towels etc... The clean linen speaks about the ability of the hospital and intern helps for the hospital [8] for name and fame.

## **METHODOLOGY**

Quality control practiced in the linen and laundry service was studied through predesigned preference/observation, interview questionnaire and by some records. The input studied includes physical facilities manpower, materials, equipments, man power includes number of employees their qualification, training salary getting job satisfaction.

Study was carried out through predesigned questionnaire, intervening at different levels, patients, staff, technician, quality dimension were studied.

### **Structure**

The employees working in linen and laundry section was subjected to a questionnaire and interviewing regarding relevant information of manpower, physical facilities layout etc. relevant records obtained from building committee. Dean office and administrative officer etc.

### **Materials and Equipments**

The quality has been reached when plenty of equipments are available. In order to reach desired results machines play vital role. Along with machine detergents, chemicals, steam and electricity is essential in order to reach desired aspect for this information discussion had with concerned engineering department equipment was studied on spot observational study and records available.

Equipments installed in laundry

1. Two washing machines 50 legs capacity.
2. Two numbers hydro extractors 50 legs capacity
3. Two numbers driers 50 legs capacity.
4. One number calendaring machine
5. Two numbers pressing tables with the help of steam
6. One number press bed

For washing machines automatic programmer is fixed and on setting time automatically machine will work. Also steam line is connected from steam boiler in order to warm up water in order to get linen clean. Hydro extractor machine will extract the water when washed materials are placed in hydro extractor automatically. Next hydro extracted materials are placed in driers. For driers steam connection is made. Temperature is attained up to 60 to 70<sup>0</sup>C. After complete drying materials are ironed in calendaring machine, press bed and in ironing tables, steam drying is for the purpose of achieving germicide free.

### **Environmental factors**

Various aspects of environmental factors also studied like lightening, noise, humidity, pollution, precise etc. These information are gathered by visiting laundry weekly. Study was supplemented by workers available in the laundry section and by general interviewing. Some records are taken from concerned engineering departments.

**Process**

The process flow chart is given below in figure 1. The study was carried out with different levels.

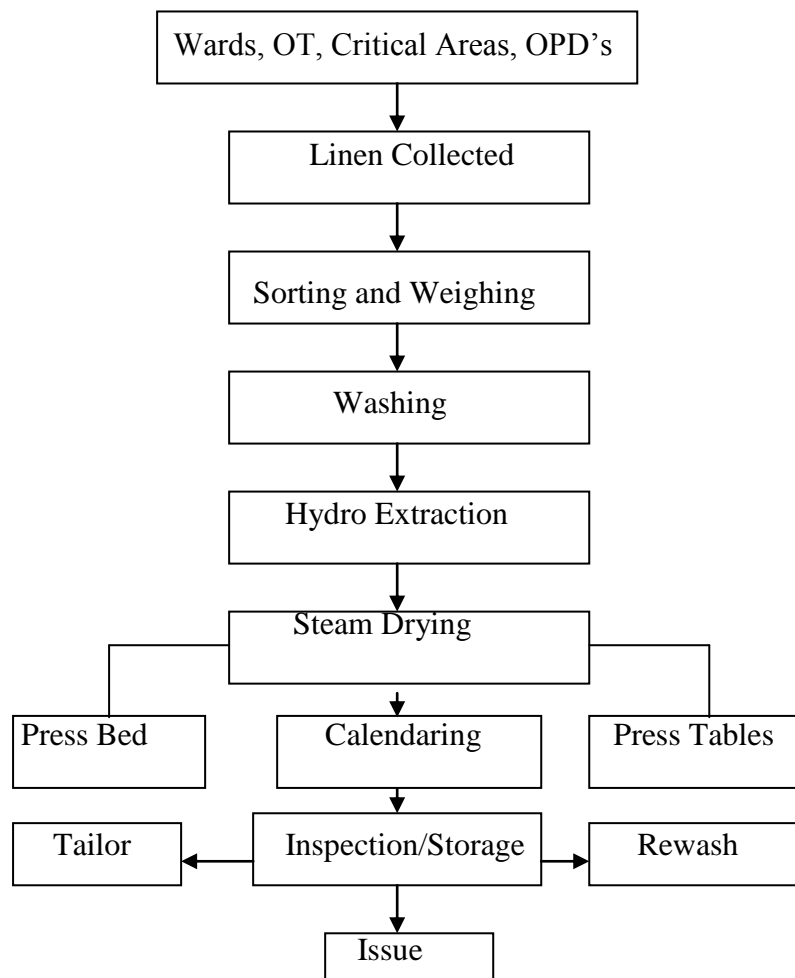


Fig1. Process Chart of laundry and linen Process

**CASE STUDY**

Study was carried out at a tertiary care teaching and research hospital. Quality control in linen and laundry service was carried out for six months in hospital In order to study the quality service provided by the linen and laundry service the parameters considered were patients’ satisfaction, staff satisfaction, and microbial count of linen.

**Patient Satisfaction**

To study the patient satisfaction for linen and laundry service a questionnaire was designed. The selected areas for these were emergency, OT, general medicines and general surgery. Because in these areas most of the accidental cases admitted and more number of patients incoming and outgoing process is continuous. The questionnaire includes six questions regarding patient satisfaction with linen and laundry service. The questions are close ended with Yes or No response. Yes response signified satisfaction and No response signified unsatisfaction. The positive responses to these questions were cumulated and average taken for analyses. The study was carried out for six months.

**Staff satisfaction**

To study the staff satisfaction with linen and laundry service questionnaire designed and distributed to the staff who are involved in patient care. A questionnaire was distributed to 250 staff personally who were selected randomly. The categories of staff Doctors, Nurses, Technicians, Ward Assistants. The questionnaire contains eight questions covering the aspects of service satisfaction. The questionnaire was analysed by cumulating the positive response and calculating for the same.

### **Microbial Count**

Microbial count study was carried out by taking the Swab culture. The samples were taken every week and sent to microbiology department. A set of questionnaires are made regarding the samples and results. The data collected was analyzed by assessing the percentage of samples found infected against the total samples.

### **Structure**

Linen and laundry service area located usually in basement area. It is much closed to emergency, OT, and critical areas. Usually it is located outside and attached to hospital in basement. A laundry has unidirectional separate entry and exit. But care should be taken for contamination.

In laundry following process are:

- Reception and sorting
- Processing area
- Storage
- Tailoring

The area provided for laundry section is 7800Sq.ft. Flooring is very much smooth and maintained with cement concrete in order to avoid slippery. Ceiling is having 16 feet height from flooring in order to have good ventilation and lighting. In order to repair machines space maintained between machines is also very good. Doors provided for exit and entry are also wide. Sanctioned staff for laundry were 54 members. But present staff working are 30 numbers. 14 posts are lying vacant. Laundry incharge is a qualified engineer, six number technicians are Bsc graduates and rest of the man power are matriculation cadre.

### **Overall Job satisfaction and motivation**

The various materials used for linen and laundry section are soap oil, stain remover, bleaching powder, blood remover, whitener, smell changer. So all the above said materials are listed and given demand for store for purchase for six months. All the materials for marinated in respective racks. After giving monthly indent materials are supplied to laundry and maintained catalogue for usage. Water supply for laundry equipments maintained with hydro pneumatic pumps so water availability is plenty. Three phase current supply provision is also made. Above all steam boiler is maintained by the side of the laundry only. When there is a requirement daily steam is generated in steam boilers and provided to respective machines.

Maintenance of the laundry equipments are made every three months along with the guidance of Mechanical Engineer. Filter cleaning for drier are made every alternate day. Greasing and belt tightening is also carried out for every three months. In some cases suggestion of company engineers is also essential in order to carry out service. Fire extinguishers are installed in laundry area only. One fire fighter trained candidate has appointed in order to have an look for whole hospital including laundry. If in case any fire with electrical channel or with steam boiler the candidate has to attend the work. Pesticide work will be looked after by sanitary department. Waste generated in the linen and laundry section it is of both the forms solid and liquid waste dispatched to STP (Sewage Treatment Plant) and solid waste is burnt according to norms of pollution control board.

### **Process**

There were no written policies for collecting and distributing linen. Usually workers from laundry use to collect linen through trolleys. Such collected linen stored in one junction. Some blooded cloths and body fluids deposited on cloths are washed with water and next sent to washing, hydro extraction etc., but dirty linen are directly weighed and sent to washing. Figure 2 shows linen washing process.

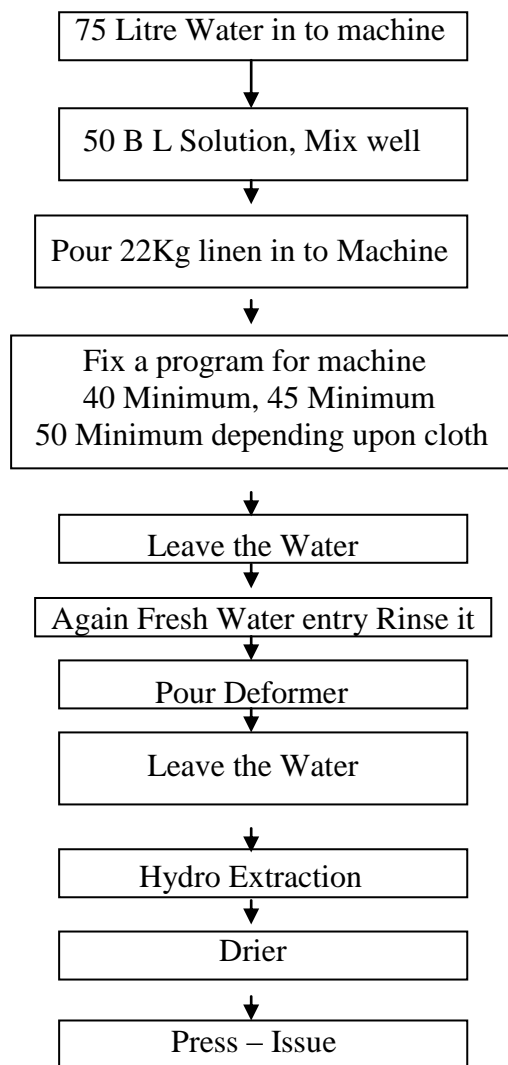


Figure 2 shows linen washing process

**RESULTS AND DISCUSSIONS**

This study was carried out in three steps based on the concept of input/output model. In this study as per the table1 average 92.5% patients were satisfied with linen and laundry service. With reference to the table 2 99.5% doctors satisfied with linen and laundry service. Almost all Doctors, Nurses, others are satisfied with Ironing, transport and located area of laundry. So overall satisfaction of Doctors, Nurses, others found to be more than 90% shown as per the table 2.

**Table 1 Patient satisfaction about linen and laundry service**

.Sl No	Patient satisfaction about linen and laundry.	Percentage
01	Bed making	97.3
02	Daily bed sheets and pillow cover blanket change	87
03	Laundry service in time	96
04	Quality of linen	98
05	Linen quality compare to other hospital	92
06	Sufficient bed sheets and pillow covers	85
	Average	92.5%

**Table 2 Staff satisfaction about linen and laundry service.**

Sl No	Satisfaction with respect to	Doctors	Nurses	Others	Overall
01	Additional bed sheet pillow cover, blanket essential	96	48	10	14.7
02	Is linen provided clean	100	100	99	99
03	Ironed clothes or not	100	98	100	100
04	Transport of linen within time	100	100	97	99
05	Comparing with other hospital linen quality	100	100	100	100
06	Laundry situated area proper	100	100	100	100
07	Is laundry staff co-operative	100	100	100	100
08	Odour of linen is good or bad	100	100	100	100
		99.5	91.0		

**Microbial Count**

With respect to microbial count our study found five of blankets sterile (Culture negative) WHICH include two numbers culture positive with CONS (Coagulase Negative Staphylococcus Aureus) and one with the bacillus species culture positive with respect to bed sheets out of seven bed sheets six were found sterile (Culture Negative). One bedsheet found culture positive with CONS organisms. For pillow covers surgeon gown and surgeon suit no organisms found as showed in the table 4 and table 5.

**Table 3 Frequency distribution of various samples**

Sl No	Samples	Frequency	Percentage	Cumulative percentage
01	Blanket	8	22.2	22.2
02	Bed sheet	7	19.4	41.6
03	Pillow cover	7	19.4	61
04	Surgeon gown	7	19.4	80.4
05	Surgeon suit	7	19.4	100
		36	100	

**Table 4 After washing**

		Sterile	CONS	Staphylococcus aureus	E.coly	Pseudomonas	Bacillus species
Sample	36						
Blanket	08	05	02	00	00	000	01
Bedsheet	07	06	01	00	00	00	00
Pillow cover	07	00	00	00	00	00	00
Surgeon gown	07	00	00	00	00	00	00
Surgeon suit	07	00	00	00	00	00	00

Organisms (Bacteria)  
CONS – (Coagulase Negative Staphylococcus aureus)  
E.coli – Escherichia coli  
Staphylococcus aureus  
Pseudomonas  
Bacillus species

## CONCLUSION

This paper has been able to identify factors that are crucial to TQM implementation in health care delivery system. The main aim of hospital is patients satisfaction. In our study overall 92.5% of the patients and their attendants were satisfied with linen and laundry service. In our study 200 personal working in various departments directly linked with patient care randomly selected and studied. (Technicians, Ward assistants, Sanitation etc..) It was found that 90% of the staffs were satisfied with linen and laundry service. In our study some of the blankets were found culture positive which may spread organism in other blankets also. Some bed sheets also found culture positive so which may cause infection to patients. So our study has suggested to periodically disinfect to minimize the danger of the re infection of clean linen and patient.

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