



An Empirical Study on Provisions of Diets to Inpatients and Minor Employees at Lady Ridgeway Hospital for Children

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ABSTRACT :

The provision of an excellent diet to pediatric patients, mothers, and minor employees at Lady Ridgeway Hospital for Children (LRH), Colombo, has been significantly impacted by fuel shortages and the ongoing economic crisis in the country. This study aimed to evaluate the diet provision process and offer recommendations for improving its efficiency at LRH, Colombo, using qualitative data collection methods.

The findings revealed that various methods and solutions have been initiated to address these challenges, including accepting monetary and dry ration donations from the public. Despite the high price of most raw foods, contributions from both domestic and international sources have played an important role in mitigating the issue. In this study minimizing food wastage identified as a critical factor in reducing hospital expenses. However, the study found that the amount of waste has remained constant when considered as a proportion of the number of admissions, with LRH producing daily average of 0.4 kg of food waste per patient, which is five times higher than the amount reported in the literature.

To address these issues, it is recommended to provide appropriate training to food handlers and kitchen staff to enhance their knowledge and practices related to proper cooking methods and food handling. This will ensure the supply of palatable, high-quality, and elegant foods for both internal and external customers, ultimately improving the efficiency of the diet provision process at LRH

Introduction

Lady Ridgeway Hospital for Children (LRH) provides comprehensive healthcare to children under 14 years of age in Sri Lanka for free at the point of service delivery. The hospital also accommodates the training of undergraduate and postgraduate students in various staff categories, including doctors, nurses, and paramedical personnel. As the final referral center for pediatric patients in the country, LRH provides services 24 hours a day, year-round, through its Accident Service Department, Outpatient Department (OPD), and Preliminary Care Unit. Over 1.8 million patients are treated and over 50,000 children are immunized annually at the OPD. Besides ambulatory care, LRH gives in-house patient care through general medical, general surgical, and specialized units such as cardiology, rheumatology, dermatology, ophthalmology, etc. In addition, laboratory and anesthesiology departments assist by providing high-quality service to the child patients.

Further physiotherapy, occupational therapy, and speech therapy units help in various ways to make the services successful (1).

LRH has over 1000 patient beds and over 2500 workforce to deliver its services, including 72 specialist doctors, 330 Medical Officers, over 100 postgraduate trainees, 889 Nursing Officers and 686 health assistants, including 76 attendants in the hospital workforce. (1).

Table:1. Hospital Summary at a Glance (2021)

Category	No
No of Ward	26
No of Special Units	8
Total no of outpatients	185731
Total no of clinic visits	166837
No of Inpatients beds	1021
Total no of patients Admitted	41609

Total no of Patients Discharges (including deaths)	41376
Daily Average Admission	114.0
Daily Average Discharges	113.4
Average Daily Sick	399.6
Average Length of stay	3.5
Bed Occupancy Rate%	39.1
Hospital Deaths	358
Bed turnover Rate	41
Total Patients Days	145855

Literature review

2.1 Importance of proper meals

Balanced nutrition is integral in caring patients. Correct eating provides physical benefits and psychological comfort while in the hospital; nevertheless, evidence shows that nutrition needs to be more addressed and taught in the clinical education of healthcare providers (2). Good supply of food is identified as a prerequisite for optimizing treatment offered to patients (3)

Managing and guiding the diet order is essential in providing patient-centered care. However, if patients have control over their diet and choice of meal ordering, they will have a better hospital experience rather than a routine recovery from illnesses (4). Moreover, food given to a child should be appropriate in amount and texture for the child's age. Food's presentation, aroma, and taste are equally important in maintaining hygienic food preparation. Nevertheless, safe handling, storage, and hand washing by staff, parents and patients are fundamental in providing safe food (5). Such food enhances patient satisfaction and, in some cases, a speedy recovery. Approximately 40% of inpatients are already malnourished at hospital admission (6)

2.2 Concept of Protected Mealtimes

The purpose of a hospital is to improve the health of those in it, and one of its first pillars is nutrition. Ensuring good nutrition for patients is vital in their recovery process and maintaining their improved health well into the future. For better recovery, happy mealtimes are essential for a child patient. So, mealtimes must be supervised carefully to provide a relaxing environment for children. In this regard, the protected mealtime approach helps the end-user during the period lunch and supper are served while all activities in the wards are stopped. Healthcare providers must be careful to create a better environment for children. The nurses and other staff will focus on meals, assisting patients, and avoiding unnecessary mealtime interruptions (2). Further, this happy meal experience will reduce food wastage, providing maximum benefit to the patients.

2.3 Provision of meals to in-house patients and minor employees in government hospitals

Hospital food service is complex, and menus should be based primarily on clinical needs and patients' preferences. However, other essential characteristics such as variety, quality, aesthetics, and food taste should be appropriately considered. When food is considered medicine, necessary dietary modifications can be made according to clinical need. Barriers to adequate food intake are multi-factorial and require multiple-level interventions, including a change in the awareness and attitude toward food among healthcare staff and the public. A therapeutic diet is modified from a "normal" diet and is prescribed to meet a medical or special nutritional need. It can be a part of clinical treatment and, in some cases, the primary treatment of a condition. On the other hand, food safety is a critical part of this process, particularly when preparing and serving food for hospitalized patients who are likely to be more susceptible to food-borne illnesses due to their health status and decreased immunity (7).

In-house patients are provided free care and meals whenever admitted to a public sector hospital in Sri Lanka. Patients' diet for a day is "the entire requirement of feed for patients for 24 hours starting from noon on a particular day to noon on the following day". When a patient gets admitted he/she entitles to obtain meals from the following day lunch (8).

Table 2. Types of diet served in hospitals.

Category	Types of diet
	Normal Full Diet
	Normal Half Diet
	Pediatric diet

		Long-term patient's diet -T.B, Leprosy, Cancer, Mental, Burned
		Patients and disabled Patients in Rehabilitation Hospitals
For patient		High Protein diet
		Diabetic Patients' diet
		Kidney Patients' diet
		High Protein/high energetic diet
		Liquid diet ix.
		Paying Patients' diet.
		Special diet (On medical advice)
Minor	employees' diet	Half Diet

2.4 Process of provision of meals at LRH

LRH is a children's hospital; when a child is admitted, one of the parent will also get admitted with the child, and they too, are eligible for the whole diet provided by the hospital. Special meals for patients are served at doctors' request. Further, minor employees are supplied with half a diet. The Process of diet provision at LRH is illustrated in Figure 1, and the pediatric diets provided are given in Table:3, Fresh vegetables, meat and eggs, fresh fruits, bakery products, dry foods and packed foods (packets, tins and bottles) are purchased from suppliers selected according to the procurement process at the beginning of each year.

Whereas, according to several required diets, quantities of all different categories of fresh vegetables, fish, meat, etc., are calculated each day. The diet order is sent to the supplier before 11.00 am, and the supplier delivers them before 2.00 pm.

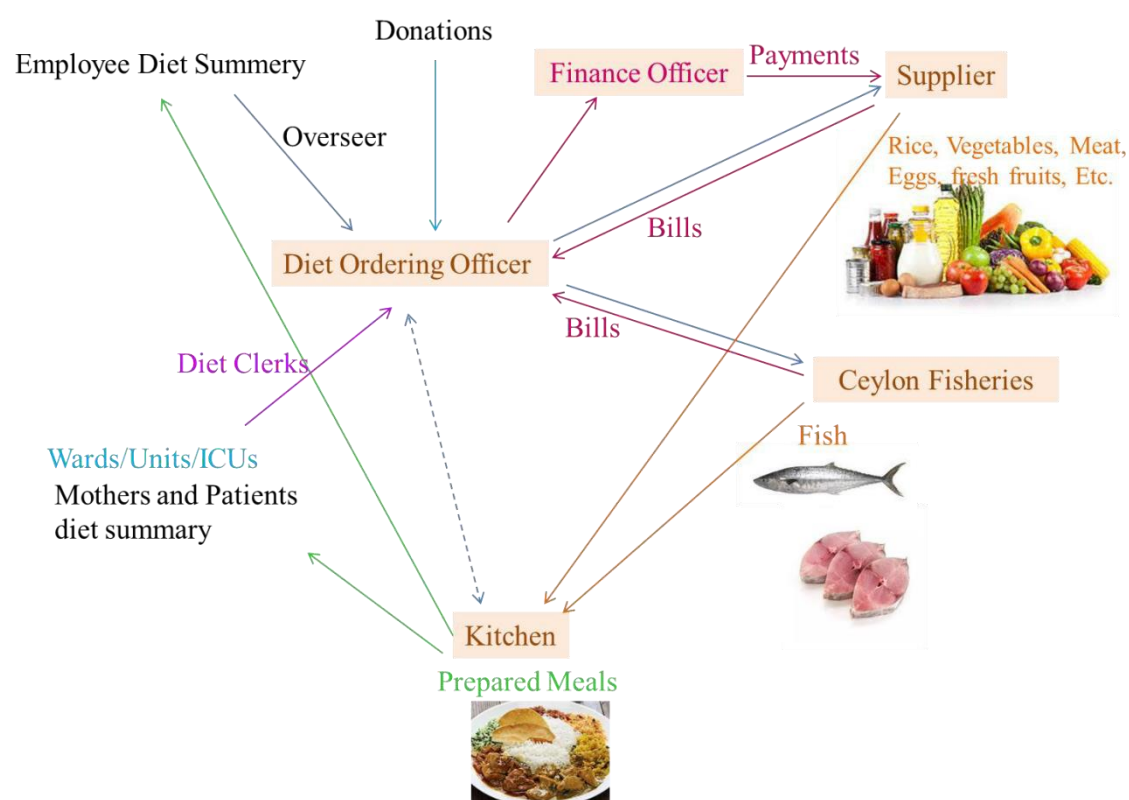


Figure:1. Process of provision of diet at LRH.

Table 3 Categories of pediatric diet at LRH.

Diet	Age Scale
S1	06 to 12 years
S2	02 to 06 years
S3	01 to 02 years
S4	Age Scale 06 to 12 years

The kitchen of LTH has dedicated staff for preparing meals, including five stewards, 11 cooks and ten minor employees. They have most of the required facilities for cooking, however the heat inside the kitchen is very high, making it challenging to wear aprons and caps. The space provided is adequate, while hygiene inside the kitchen is debatable.

Methodology

This was a descriptive case study. Qualitative tools were used to collect data. Key informant interviews were carried out with the Deputy Director, Accountant, Chief Nursing Officer, Administrative Officer (AO), and officer in charge of the kitchen. Further, interviews were carried out with the diet ordering development officer and a few mothers of children admitted with their children. Document review on already available data were carried out. Telephone interviews were carried out with the supplier whenever necessary. The investigator carried out direct observation of the kitchen and food waste collection.

Results

Issues identified in the process of meal provision at *LRH* included uncertainty of raw food supply, high wastage of cooked meals, delay in payments to raw food suppliers, low quality meals, irregular gas supply for cooking and inadequacy of required equipment's.

Different problems were identified with key informant interviews and focus group discussions held with multiple categories of workers. Using priority matrix (Table 4) with help of stakeholder's wastage of cooked foods, appeared on the top in the list was selected for further analysis.

Table 4. Priority Matrix for List of Problems.

Problems	Frequency	Importance	Feasibility	Total
● Uncertainty of raw food supply	8	9	6	23
● High wastage of cooked meals	10	9	8	27
● Delay in payments to supplier	7	9	5	21
● Low quality meals	10	8	6	24
● Irregular gas supply for cooking	3	10	6	19
● Inadequacy of required equipment.	5	4	9	18

Discussion

Food wastage is always observable in any hospitals, it is more apparent in the government sector hospitals which draws high costs. A study by WRAP in NHS hospitals revealed that 0.5 kg of food waste is made by a patient per week. Much of that is simply due to poor management or human error. Further, reduced waste production helps minimize the effort to collect waste and lower the expenses associated with waste management (7). Huge total waste exceeding 40% of hospital food served has been reported by Barton and others (9).

At LRH, according to information gathered from data collection and informant interviews, during the pre-COVID period, four to six barrels (300 to 450 kg) of food waste were produced daily, when there were 950 average total number of in-house patients. However, during the COVID period, the data indicates that the total number of in-house patients per day averaged was just over 450, with total food waste production ranging from two to two and a half barrels (150 to 210 kg) per day. Nevertheless, the average waste production per patient per day was approximately identified as 0.4 kg for both the

pre-COVID and COVID periods. This figure was five times higher than the expected waste production and the proportion of food waste production was observed constant when compared it with the total number of inpatients during both pre-COVID and COVID era (7). Furthermore, it has been noted that the costs for food and waste disposal have risen to a very high level due to the existing economic crisis in the country, highlighting the urgent need to reduce waste production in hospitals.

Figure 2 illustrates the Analysis of underlying reasons for the high wastage of cooked food using the five whys technique.

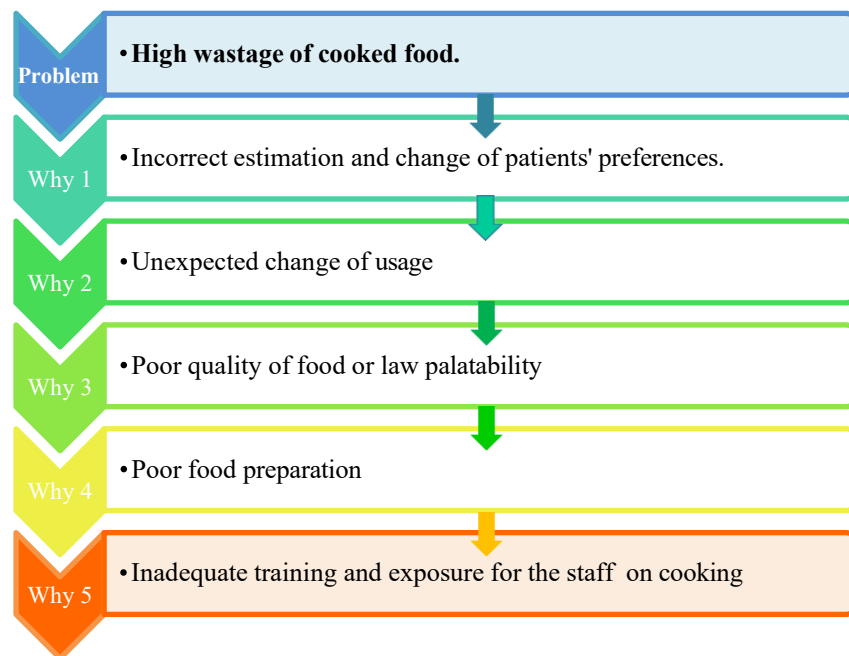


Figure 2. Why-why diagram of reasons for food wastage in LRH.

This study identified that the wastage of foods at LRH is considerably high, which is further stressed by fuel and economic crises in the country with a high inflation rate. Maximum effort should be made to minimize food wastage and the waste of public funds.

How to overcome problems with employees

Employees should be educated on the importance of minimizing food wastage, highlighting the benefits to individuals, the economy, and the environment. Additionally, the annual monetary loss from food wastage should be presented using actual data, emphasizing how these funds could be better utilized for the country's benefit.

Workshops and training programs should be arranged to improve knowledge and cooking methods, based on identified needs. Personnel involved in the process should be given ownership, and the meal supply process should be benchmarked against other hospitals such as Lanka Hospitals, to enhance the overall diet supply at the hospital.

How to overcome the problems of management

Hospital management should survey and identify the actual economic losses, then take necessary actions to minimize food wastage from the delivery of raw materials to the supply of meals to patients and eligible employees.

How to overcome problems in the procedure

At LRH, meal requirements were collected manually by diet clerks who run unit to unit. The required number of diets should be clarified each morning from the hospital's office before ordering meals for healthcare assistants. Digitalizing this process will prevent cooking incorrect amounts based on previous day orders. Additionally, a digital database will provide real-time access to all authorized officials and stakeholders, eliminate duplication of work, reduce delays, and ensure instant coordination among different units in the hospital.

However, it is essential to secure the commitment of higher hospital officials to establish a sustainable review and feedback mechanism to address errors, food-related issues, and wastage. Emphasizing on food quality and safety is crucial, and personnel should be trained in these aspects to ensure the provision of satisfactory meals to consumers.

Conclusion

The provision of meals at Lady Ridgeway Hospital for Children (LRH) became unstable due to fuel shortages and the country's economic crisis. To overcome these challenges, various solutions were introduced, such as accepting monetary and dry ration donations from the public. With the increase in raw food prices, minimizing food wastage became essential. This study reveals that the amount of wastage was similar to pre-COVID-19 levels when compared to the proportion of admissions. Therefore, effective handling of related issues with stakeholder consensus is mandatory to minimize food wastage.

7.Recommendations

Digitalizing the diet ordering process at LRH is a viable solution to minimize delays, reduce waste, eliminate duplication of work, and enhance flexibility, ordering speed, and patient satisfaction. In the long run, digitalization is expected to significantly reduce wastage and associated costs.

To complement this digital transformation, it is crucial to arrange training programs for kitchen staff and food handlers focusing on hygiene, food preparation, and handling to enhance their knowledge, practices, and skills. Additionally, providing the necessary facilities and incorporating new technologies in the cooking process will further improve efficiency and food quality.

Regular reviews and stakeholder feedback on food supply and wastage, along with customer surveys and suggestions, will support continuous quality improvements in meals and beverages. Ultimately, implementing a tailor-made diet ordering system as seen in developed countries, will ensure a more personalized and efficient diet provision process at LRH, leading to better patient outcomes and overall satisfaction.

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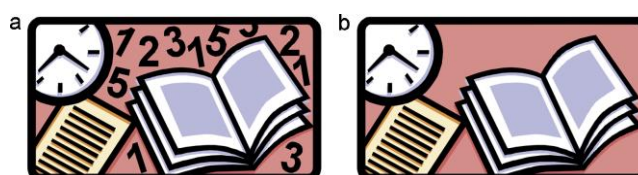


Fig. 1 - (a) first picture; (b) second picture.

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