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Dear Ms. Loyva,

Here is my report, Causal Analysis of Food Waste at Mount Saint Joseph Hospital. Your input during our interview was greatly appreciated and provided important data to inform the recommendations. Thank you for your continued guidance.

The purpose of this report is to investigate the causes of food waste in healthcare facilities, particularly Mount Saint Joseph Hospital, and identify possible solutions. Primary and secondary research have been analyzed and interpreted to inform a series of recommendations on how Mount Saint Joseph Hospital can prevent and reduce food waste.

I hope you find this report informative and helpful. Please contact me at zoemaika@student.ubc.ca with any questions.

Sincerely,

Zoe Maika

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Causal Analysis of Food Waste at Mount Saint Joseph Hospital

for
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Abstract

Healthcare facilities are a major contributor to food waste, which in turn costs businesses money, negatively impacts the environment and decreases productivity (Gooch et al 14). The purpose of this report is to investigate the root causes of food waste in healthcare facilities and determine appropriate solutions.

A survey was distributed to food service managers across British Columbia, food waste data was collected from Mount Saint Joseph Hospital (MSJH), and secondary research was conducted on successful food waste reduction methods. Plate waste is the area with the largest amount of waste and current systems to manage this are inadequate.

Given the greatest proportion of food waste comes from plate waste, improving quality of food and the overall dining experience is a priority. Innovate dining systems such as Dining On Call and SuzyQ Menu Concepts have seen success in reducing food waste and improving the patient dining experience.

Areas for improvement at MSJH include the hostess system, the long-term care resident dining experience, and continuing education for food service staff. The following recommendations are proposed:

- A hostess is working every day of the week
- The hostess visits patients twice per day
- Acute care patients can call the diet office to request a small portion or late meal
- Use SuzyQ and beverage carts for long-term care meal service
- Provide continuing education for cooks and food service staff

Introduction

Background

Worldwide, an estimated one third of food produced for human consumption is lost (discarded food during production, processing, and manufacturing) or wasted (discarded food during distribution) (Gooch et al 14). Healthcare facilities are a major contributor to this waste, and Canada is no exception. The impact of food waste is much more vast than simply throwing food in the garbage; it costs businesses money, negatively impacts the environment, and decreases productivity (Gooch et al 14). Every year Canadian hospitals lose millions of dollars to food waste (Canadian Coalition for Green Health Care) with few healthcare facilities taking real action to change this. Mount Saint Joseph Hospital (MSJH) serves approximately 180 acute and long-term care patients 3 times per day, generating a huge amount of waste from uneaten food. With a tight budget to work with, it would be of great benefit to patient food services to reduce food waste, save money, and minimize environmental impact. Less food returning to the kitchen means more food is being eaten, leading to healthier and happier patients.

Content & Purpose of Report

To reduce food waste, the root causes must first be determined. Food waste can occur at several stages in the supply chain, from delivery to production to the meal being served to a patient. This report aims to investigate the causes of food waste at MSJH and other healthcare facilities in British Columbia and determine what can be done to minimize these causes. To help inform the report, primary and secondary data were collected. Upon analyzing this data, possible strategies for food waste reduction are proposed. Given MSJH has both acute and long-term care beds, different solutions are discussed for both areas.

Throughout this report, the following questions will be addressed:

- Where does food waste occur in healthcare facilities?
- What is the major source of food waste at MSJH and other healthcare facilities in BC?
- What systems are in place to reduce food waste and how effective are they?
- Why does food waste occur?
- What has worked for other facilities in reducing food waste?
- What can be done to further reduce food waste at MSJH in both acute and long-term care?

After analysis is complete, possible solutions for food waste reduction in both acute and long-term care at MSJH are considered.

Methods

A survey containing five food waste related questions (see appendix A) was distributed to food service managers of healthcare facilities throughout British Columbia and data was compiled into graphs to inform the report. Food waste data was collected from MSJH via an interview with Jessica Loyva, General Manager of Food Services. Finally, secondary research was conducted to gather intel on successful food waste reduction methods in other facilities.

Data Section

Food Waste in BC Healthcare Facilities

According to a survey (see appendix A) distributed to food service managers of acute and long-term care facilities, the highest incidence of food waste happens once the plate of food reaches the patient. As seen in figure 1, plate waste was the choice selected most frequently by managers when asked where food waste occurs the most.



Figure 1. Where does food waste occur?

Plate waste occurs when a patient doesn't eat all the food served to them during a meal, which can be due to several reasons:

- Poorly prepared food due to lack of adequate training for the cook
- Not aligned with personal or cultural preferences
- Portions are too big
- Patient is not hungry
- Hot food is not hot enough and cold food is not cold enough

Although some waste is inevitable, the amount currently seen in healthcare facilities is excessive. According to data from Environment and Climate Change Canada, 21% of dairy, eggs, and field crops, 38% of produce, and 20% of meat that enters the food service industry becomes waste. Healthcare food service makes up 10% of this industry. Most of the points above relate to one main concept: the overall dining experience. This includes the quality and quantity of food, whether this food is aligned with patient needs and preferences, the way in which the

food is served to the patient, and the time it is served. Reasons why this is important and ways to improve current practices are discussed throughout the report.

Food Waste Management Systems in BC Healthcare Facilities

The following results of the survey indicate what systems are in place to manage food waste and their perceived effectiveness. As seen in figure 2, systems vary with the largest proportion (38%) of facilities using a combination of plate waste audits and patient satisfaction surveys. 25% of managers indicate no current systems in place, 25% use feedback from patients/residents and 13% use plate waste audits alone.

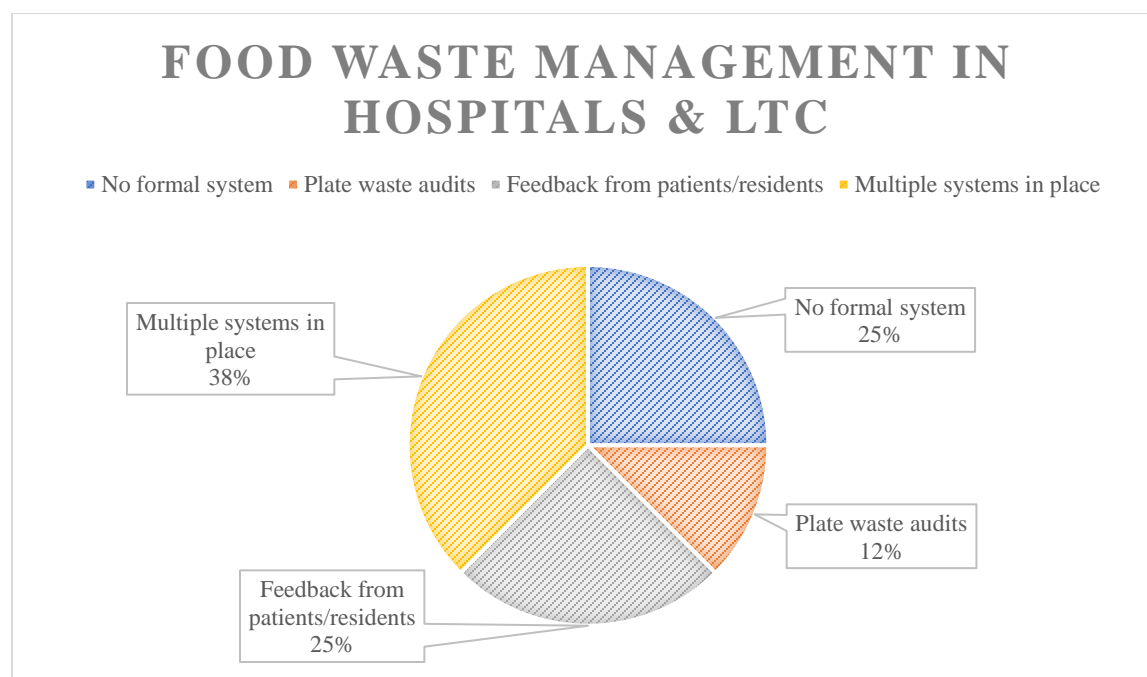


Figure 2. Food waste management in hospitals & long-term care

When asked to rate the effectiveness of current food waste reduction methods (see figure 3), the average was 4.2/10 with the lowest rating being 0/10 and the highest being 7/10. Despite the high variance, a maximum rating of 7/10 indicates that food service managers generally are not satisfied with the current methods for food waste reduction. The results shown in figure 3

demonstrate that having a system is better than not having a system, but current practices have room for improvement.

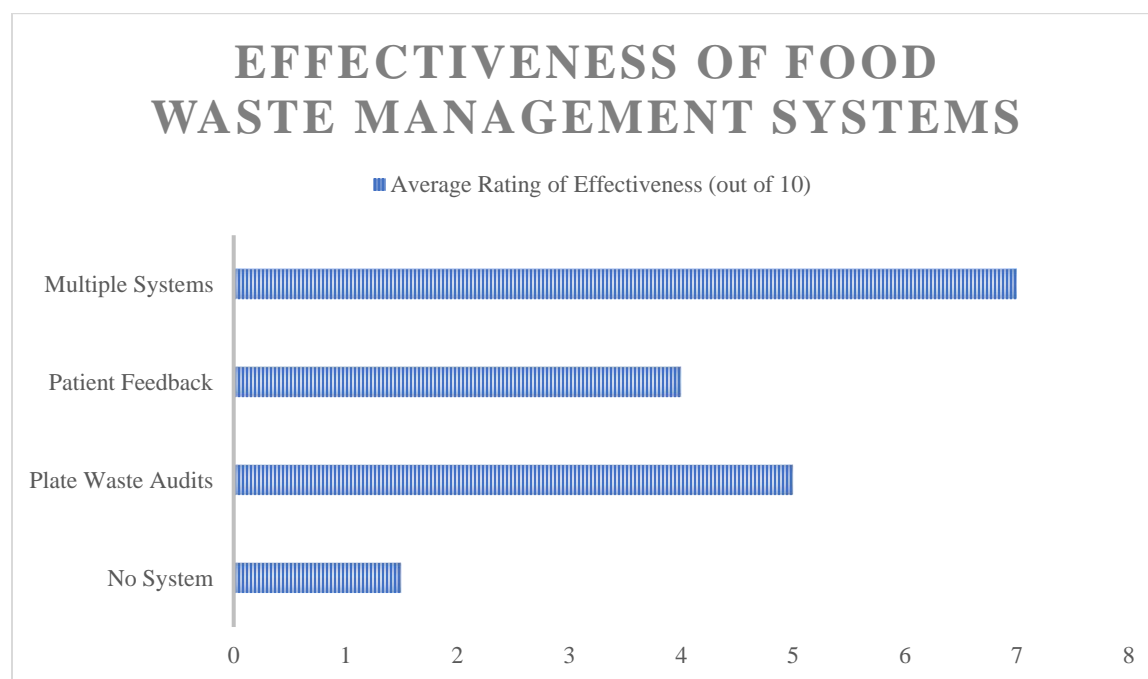


Figure 3. Effectiveness of food waste management systems

Dining On Call at BC Children's & BC Women's Hospitals

In 2017, BC Children's Hospital and BC Women's Hospital implemented Dining On Call (DOC), a service that allows patients to order meals at any time of day that align with their dietary specifications (Abou El Hassan et al). Since beginning this program, average plate waste has decreased from 30% to 17%, patient energy intake has increased, and patient meal costs were reduced by 28% (Abou El Hassan et al).

Although implementing a Dining On Call model requires a complete overhaul of patient food services and is likely not feasible for MSJH at this time, the overall concept of increasing patient autonomy and giving patients more flexibility during meal times is something to consider.

Reducing Food Waste with SuzyQ Menu Concepts

When it comes to food service in long-term care homes, the top 5 complaints are improper temperature, high food wastage, an outdated patient preferences list, poor customer service, and a shrinking food budget (Quiring). In 1998, Registered Dietitian Suzanne Quiring designed a system where the food was delivered right to a resident's table. Using a portable steam table, food service workers would wheel the hot food to a resident and ask them directly what they wanted (see figure 4). This allowed food to stay hot, mitigated the need to check a preferences list for each resident, and increased resident-staff interaction. The system also greatly reduced food waste since residents were choosing exactly what they wanted to eat and the food came to them hot (Quiring). The decrease in food waste led to a decrease in money lost for long-term care facilities. This system has been implemented in many care homes across North America and has had great success.



Figure 4. SuzyQ Cart from “Lakeside SuzyQ Meal Serving Cart.” *Hubert*, <https://www.hubert.com/product/12040/Lakeside-SuzyQ-Meal-Serving-Cart---41-38L-x-34W-x-35-14H>.

Food Waste Management at Mount Saint Joseph Hospital

MSJH has solid systems in place to manage and reduce food waste, but there is room for improvement. Firstly, the weekly plate waste audits are completed for an entrée, but not for the vegetable (Loyva). Although vegetables have simpler recipes and less variety, they are still a big part of plate waste. Helen Yeung, the dietitian for the long-term care ward of MSJH, frequently observes vegetables being left over on residents' trays. The frequency of "failed" scores on plate waste audits is also high at approximately once every 2 months (Loyva).

Another area that could benefit from revision is the hostess system. The hostess visits approximately 80% of eligible patients in acute care, leaving several patients unvisited due to various reasons (Loyva). Some of these unvisited patients may be given marked menus, but inevitably, there are missed patients everyday who are given the default meal choice. Furthermore, the hostess doesn't work on weekends and holidays, leaving at least 2 days of the week where acute care patients do not get to choose what they eat. Finally, hostess visits occur in the morning, missing patients who are admitted later in the day.

A recent hit to food waste reduction efforts was the COVID-19 pandemic. During the pandemic, there was a rise in food waste due to lack of contact with patients and no visitors allowed in the hospital (Loyva). As regulations have lightened, food waste has decreased again due to increased contact with patients, further confirming that involving the patient as much as possible in meal selection is crucial to minimizing plate waste.

Conclusion

Summary & Interpretation of Findings

Food waste continues to be detrimental for businesses and for the environment. Despite it being a major issue, there has been little to no improvement over the years and healthcare facilities are still a big part of food waste overall. Based on survey results, food waste management systems in healthcare facilities are not very effective. Although plate waste audits are informative and necessary, their high fail rate indicates that they do not address the root cause of plate waste. Dining On Call and SuzyQ Menu Concepts both involve the patients in the meal selection and offer more flexibility for when, what, and how much food a patient eats, and both systems have led to a reduction in food waste. MSJH could also benefit from a more flexible and patient-centered meal service.

Based on the data discussed throughout this report, the main source of food waste in healthcare facilities comes from plate waste, and the main reason for plate waste is an overall poor dining experience. The following recommendations will improve the dining experience at MSJH and will therefore reduce plate waste.

Recommendations

Acute Care. Reaching all patients on every day of the week is the main priority for ensuring they have a chance to indicate their meal preferences. To do this, the hostess can keep track of patients that haven't been visited and provide a marked menu instead. Rather than only visiting once in the morning, returning once more before dinner service will ensure that late admissions are not missed. Adding a hostess on the weekend shift will allow patients to indicate preferences every day of the week rather than just weekdays.

Timing is another important aspect of meal service. Patients may or may not be hungry at 12 PM or 5 PM when meals are served. Introducing an option where a patient can request a small portion or a late meal could help reduce uneaten meals due to a patient not being hungry. Either the patient or the nurse can call the diet office and put in a request with the diet technician, who would indicate this on the patient's tray ticket. A select number of meals would then either be prepared in small portions or saved for later and reheated.

Long-Term Care. Since long-term care residents eat in the dining room rather than their rooms, a SuzyQ cart system would work well to involve the residents in the meal selection process rather than relying on previously indicated preferences. Because residents decide on selection and portion size, there is much less food wasted ("Improving Health Care Dining."). The portable steam tables would fit easily in the kitchen space and can be wheeled straight from the kitchen to the long-term care floor. Each SuzyQ cart serves 40 residents ("Improving Health Care Dining."), so 3 carts would be needed at MSJH.

For beverages, using a similar mobile concept will reduce the need for pre-portioned drinks and therefore prevent residents receiving drinks that they don't want. A beverage cart with hot and cold beverages can be set up in the kitchen and transported to the long-term care floor along with the food.

The staff reap certain benefits from the system as well as the residents. The cart is easily maneuverable and there is no running to and from tables to deliver trays ("Improving Health Care Dining.").

General Recommendations. Both acute and long-term care residents benefit from delicious, well-cooked food made using innovative recipes. The more people enjoy the food they eat, the less food they leave uneaten. Providing continuous training for the cooks and food

service staff will arm them with excellent skills to cook the best possible food and give the best possible service. Although money will be spent on this training, the money saved through a reduction in food waste will make it a worthwhile investment.

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Appendix A: Survey Questions

1. In what kind of facility to you manage patient food services?
 - a. Long-term care
 - b. Acute care
 - c. Both acute and long-term care
 - d. Other
2. What system is used for meal service?
 - a. Trayline
 - b. Dining room service
 - c. Pod system
 - d. Other
3. Based on your observations, where does food waste occur most?
 - a. Overproduction
 - b. Plate waste
 - c. Poor inventory control
 - d. Other
4. What systems are in place to reduce food waste?
5. How effective are the current systems in preventing and reducing food waste? (Indicate on a scale of 0-10)

Appendix B: Interview Questions

1. What current systems are in place to evaluate and reduce food waste?
2. During your time at Mount Saint Joseph Hospital, have you observed a reduction in food waste, an increase, or has it stayed the same?
3. If increase or decrease: why do you think this is?
4. How often do you complete plate waste audits and for which foods?
5. How often are plate waste audits given a “failed” score?
6. What happens when a food/meal fails a plate waste audit?
7. Does the hostess visit the majority of patients?
8. Why are marked menus only given to some patients?
9. BC Children’s and BC Women’s Hospital implemented a “made to order” style of food service where patients call the diet office to place their order. This has greatly reduced food waste since patients only eat when and what they want. Although this exact system wouldn’t be feasible at MSJ, do you think giving patients more autonomy regarding when and what they eat would be effective at this facility?