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Original Article

Why Patients Discard Their Food? A Qualitative Study in Iranian Hospitals

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Abstract

Introduction: Food waste reflects inadequate food intake and is of economic and environmental importance. Therefore, understanding the underlying factors is a must to combat food waste. **Methods:** A qualitative study was conducted using semi-structured interviews with managers, nurses, nutritionists, food providers, kitchen staff, and inpatients at three hospitals in Tehran. Responses were recorded, coded, and analyzed thematically. **Results:** Forty-eight face-to-face interviews led to three core categories: 1. opinions/performance; 2. causes, related factors, and characteristics; and 3. rooting and suggestions. We found that the majority of the hospitalized patients did not consume their entire food. In spite of overall satisfaction with the quantity and quality of food, anorexia, personal taste, and poor quality of raw materials prohibited patients from eating. Also, rice was the most discarded food. Economic barriers were the most important hindrance to elevate the quality, and some strategies, like the supply of high-quality materials and recruiting skillful cooking team, were proposed to improve it. **Conclusions:** Our findings delineated a limited budget as the main barrier to improve the quality. Nevertheless, the low quality of hospital foods may actually impose a heavier economic burden due to food waste.

Keywords: *Food service, food waste, hospital, patients, plate food waste, qualitative study*

Introduction

A healthy, adequate diet meeting patients' requirements is the ultimate goal of nutrition support in hospitals. Evidence revealed incomplete food intake[1] and great waste in hospitals.[2,3] This causes lower nutrients intake[3] and malnutrition.[4] Patients discard one third of their food.[2] Eating only a quarter of food doubles the risk of dying.[5] Therefore, regular food monitoring and revision of policies are highly acclaimed.[6] A sustainable foodservice with the least wastage is a challenge for health professionals. We investigated causes of food waste and approaches to reduce it to provide information for effective interventions.

Materials and Methods

Design

A qualitative study was performed on hospitalized patients in medical and surgical wards, nurses, nutritionists, food staff, suppliers, and managers. We followed the "Consolidated criteria for reporting qualitative research" (COREQ) checklist.[7]

Ethics

The protocol was approved by the Ethics Committee of XX at YY (Ethical code: IR.SBMU.NNFTRI.REC.1398.073; Date: 2020-01-05). Before initiation, the interviewees signed a written consent and were assured that their personal information would not be disclosed to others. All records were permitted in advance.

Setting

This study was conducted in clinical, management, and food service units of three educational hospitals in Tehran from June 29 to July 20, 2020 and with a pause due to corona pandemic from January 12 to 14, 2021. Each ward contained approximately 30–40 beds. As this study was conducted during the COVID-19 pandemic, foods were served and packaged in disposable dishes in the central kitchen, delivered by trolleys, and containers were discarded at the ward. Breakfast was served between 6:15 and 7:00, lunch at 11:30, and supper nearly at 18:30.

Interviews

Data were collected through in-depth interviews guided by a "Topic Guide" developed based on the objectives and target

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groups described in detail elsewhere.[8] Six topic guides were prepared for six target groups: nurses, nutritionists, food suppliers, patients, managers, and foodservice staff. The guides were semi-structured, that is questions were not necessarily asked in a specific order. Open-ended questions explored insights into food consumption/waste, perceptions of quality and quantity, accordance with requirements, the most wasted food, reasons for incomplete consumption, the most important feature, recommendations for quality promotion, factors contributing to quality, perceived obstacles, and approaches to increase quality and decrease waste.

In each hospital, the research team was officially introduced to the head nurses, nutritionists, and food service personnel by the hospital authorities. The informants were interviewed face-to-face, consecutively. Patients' interviews were conducted at their bedside and with others in a comfortable space and time at their workplace. The chief investigator was a female Ph.D. candidate (RA), who facilitated the interviews and did the primary coding. She was an accredited nutritionist with prior clinical experience in hospitals and public health; however, she did not work in the hospitals she. The observer of the study was a faculty member well-experienced in qualitative research (MA). At the beginning, the moderator introduced herself and elucidated the aim and process of interviews. The moderator took notes of interviews and simultaneously recorded the interviewees' body language and gesture, and all interviews were recorded with their permission. Basic information, including the informants' position (staff, patient, etc.), demographic data (name, age, department, date of hospitalization), and the date and place of the interview were recorded. The interviews lasted between 15 and 45 minutes and continued until data saturation, that is, no new information was gathered.[9]

Trustworthiness

Before starting the fieldwork, a pilot study was conducted to resolve any inadequacies. A qualified member (MA) observed some of the interviews randomly. To fulfill validity, she audited the procedures of interviewing, coding, analysis, and interpretation of data. To ensure conformability, she repeatedly restated her perception of their answers during and at the end of each interview and requested correcting her perception if necessary.[10] Additionally, to assure the validity of the data collection, they were collected from dissimilar respondents (triangulation).[9] Transferability was achieved by thoroughly describing the research circumstances.[11]

Reliability (dependability) is the degree of consistency with which items are assigned to the same category by different observers or by a single observer under different conditions.[12] It was attained by checking the coding of 10% of interviews (n = 5) by the first coder (RA) and separate code checking by a second research member (MA). The inter- and intra-coder agreement rates were calculated to be 98.32% and 95.24%, respectively.[13]

Analysis

Deductive content analysis was used. Data were collected, analyzed, and classified simultaneously.[14] All notes were sent to MAXQDA software (Version 10, Sozialforschung GmbH, Germany) and were carefully read several times to explore the emerging codes, subthemes, and themes according to the main objectives. The most frequent themes were subsequently allocated to pre-defined categories based on the research questions. Finally, members discussed and reported the emerging themes and core categories.

Results

Forty-eight face-to-face interviews were conducted with patients (n = 12) and nurses (n = 9) from medical and surgical wards, hospital managers (n = 3), food suppliers (n = 3), nutritionists (n = 8), and kitchen staff (n = 13). There were 28 males and 20 females with a mean age of 40.3 years old (min: 22, max: 65) and hospital stay of 5.3 days (SD: 4.6). Four were from medical, 17 were from surgical wards, and the rest were from food service or management offices. We were unable to conduct interviews in the medical wards of two hospitals, because they were allocated to Corona patients. Two nurses did not participate due to heavy work load and three patients due to personal reasons.

Key themes

Three core categories and eight themes emerged: 1. Opinions performance: amount, quality of food, and the most wasted food; 2. Causes of inadequate consumption and factors affecting quality and desired features; and 3. Rooting and suggestions: perceived barriers and strategies to improve. Viewpoints and beliefs about hospital food are presented as follows:

Causes of food waste?

Quantity of food consumption

The majority of patients did not consume their food completely: *"I've been here for ten days and have not eaten anything at all." (Patient-Male- 25 years old- Surgery Ward)*. A nutritionist noted: *"Many of them (patients) cannot eat the entire food, their appetite is low…" (Nutritionist -Male- 38 years old)*, which means food waste production.

Reasons for incomplete intake

Nurses considered "anorexia" as the most important reason: *"Many patients have cancer and do not have an appetite for food." (Nurse –Male-40 years old- Surgery Department)*. However, the food suppliers declared "personal taste" as the main reason. Half of the nutrition experts and some nurses thought that "poor materials" prevented patients from

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eating, *"Lavash bread that they bring in package is not the same as fresh one" (Nutritionist- Female-33 years old)*.

"Patients' opinion about food restrictions" was another reason, especially in diabetic people, *". many people think that they should not eat rice at all, because they have diabetes…"* (*Nutritionist-Female- 33 years old).* Also, some nurses implied that they advised to eat or not, especially after operation, like less food intake or not drinking milk. Some patients did not eat despite having appetite due to the lack of receiving advice from physician, and a nutritionist complained about not following some dietary recommendations by kitchen.

The most wasted foods

The majority of nutritionists believed that "rice" comprised the highest waste proportion and that the low quality of rice (mainly Indian rice) was the main reason, *"…Rice is the most wasted item, because it's Indian …" (Nurse – Female- 40 years old- Surgery Department)*. Only a nutritionist pointed to "vegetables", *"They don't like cooked vegetables, they prefer salads."* But, nurses mostly mentioned "bread," and afterward "rice." Few people mentioned meat, poultry, and fish.

Perception of quantity

Although the amount of food was reported sufficient by the patients, nurses, nutritionists, food suppliers, and serving staff, managers believed that it was more than required: *".... because we have a high quantity of food waste and the quality of food is shown desirable by the survey of staff and patients, if we have waste, it means that the quantity is high" (Hospital manager-male -65 years old).*

Some nurses and a nutritionist believed that the diabetic food portion was too much. But, some nurses, nutritionists, and food staff thought that people with diabetes and men often complain about low quantity: *".... it's somewhat little for men's ward and diabetics and they're dissatisfied." (Nutritionist - Male - 37 years old)*. A nurse assumed that the food quantity was too much for operated patients.

Perception of quality

The majority of patients, managers, and food suppliers believed that the overall quality was satisfying; however, nutritionists had another opinion: *"I am not personally satisfied with the quality" (Nutritionist - Female - 45 years old)*, or a patient described: *"The cooking method is not interesting.... the preparation of rice is not good., ...I give 12 or 13 out of 20." (Patient- Male- 60 years old- Surgery Department)*. Half of the respondents believed that hospital food was inappropriate for patients.

Factors affecting the quality

Our findings showed that "taste" was a vital factor for quality, as it was reported by all the nutritionists and kitchen staff and the majority of the patients and food suppliers. "Cooking method" and "quality of raw materials" were other contributors, *"The ingredients are effective, but the chef is more important, if he is skillful …" (Manager-Male-42 years old).* All food suppliers affirmed that "food appearance" was a critical element to elevate quality: *"First of all, the good look of food motivates you to eat, that is, food decoration."*

Only the managers mentioned "food monitoring," and a manager referred to "defects in the food contract": *"… when you let Indian rice and frozen meat in your contract, and many of food and liquids are not included in your contract, you practically cannot do anything later".*

Features of proper food

According to the majority's opinion, "taste" was an essential feature. "Quality of raw materials" was mentioned by the patients and managers. "Food appearance," "packaging," and "side dish" were cited by the managers. Managers had special attention to "hygiene," *"..., health first, then taste…" (Manager- Male- 43 years old)*, and thought that "chef skills" was more important than materials. All nutritionists and managers referred to "temperature" and most of the nutritionists and some others cited "quantity": *"… The first thing they say is the size of food." (Chef-Male-50 years old)*. "Variety" was more important to food providers, kitchen staff, and some nutritionists.

How to reduce food waste?

Barriers to improve quality

"Economic barriers," that is, lack of budget, inflation, and market instability, were leading obstacles unanimously declared by all nutritionists, managers, suppliers, and a few kitchen staff: *"…, the price of a food item has gotten doubled, the supplier made the contract at half price the last year." (Nutritionist-Female- 33 years old).* Most of the managers and nutritionists declared "contract limitations," like a lack of recruiting criteria, as another complication. A manager implied that financial matters restricted high-quality materials in contracts. Most of the nutritionists cited "insufficient nutritionists" and "unqualified foodservice workers,", and a manager confirmed lacking enough nutritionists and a preference to recruit nurses. Lack of a selective menu, a heavy workload, insufficient budget, a common elevator, long distance, unstable orders, and long-term hospitalization were other impediments.

Strategies to improve food quality

"High-quality materials" was cited by the majority of informants. Also, many declared "skilled cooking team." "Diversity" and "giving a side dish and decoration" were mainly proposed by kitchen staff, managers, and food providers. Many nurses mentioned "hygiene promotion." Although the serving staff and a food supplier believed

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that serving in ceramic dishes would maintain quality, a manager, a patient, and a few nurses and foodservice personnel supposed that disposable packages would be better. "Considering patient's taste," "improving budget/payments," "maintaining temperature," "upgrading distribution system," and "selecting a committed supplier with financial capability" would be other strategies. The kitchen staff mentioned confusion about some regimens, like diabetic ones, and proposed uniting portion sizes.

Discussion

We found that many patients had insufficient food consumption, similar to the findings of the nutritionDay survey[1] and a prior investigation in hospitals affiliated with SBMU,[15] possibly causing food waste, lower nutrient intake,[16] and malnutrition.[3,4] In spite of general satisfaction with food quality and quantity, many patients did not consume it entirely, which might be due to anorexia or receiving adverse advice. Also, food quantity might be excessive for older and diabetic patients or those with operation. A qualitative study in Australian hospitals described food portions as "oversize" for older patients and "little" for young people or pregnant mothers.[17] In a study by Jessri *et al*.,[15] despite patients' criticism of the small portion size, many did not eat the entire food because of poor quality and felt hungry until the next meal. Considering the fact that only half of the respondents mentioned food compatibility with disease conditions, hospital food did not possibly meet their nutritional requirements. Evidence suggested that administration of discordant foods with disease was a reason for food dissatisfaction.[15]

Same as what we found, studies suggested that anorexia is a common reason for not consuming hospital food,[18] and many patients have less appetite compared with at home.[19] British patients did not consume hospital food due to poor appetite, poor quality, and large portions,[20] which is consistent with our findings but not the portion size. Based on the nutrition Day results, reduced food intake during the past week, restriction to bed, female gender, younger or older ages, and a lower body mass index were the most associated factors with lower food intake in hospitalized patients.[1]

Based on our findings, food features like taste, temperature, and appearance, as well as packaging, raw materials, hygiene, variety, quantity, side dish, and cooking method, were essential for an appropriate hospital food. In a previous study in medical and surgical wards of a National Health Service hospital, food quality, the ability to choose, and the behavior of serving staff were of great importance to the patients.[18] We found that rice had the highest waste among the studied hospitals, which was probably due to its low quality. This finding is plausible as rice is a staple food in Iran and most people do not like the taste of non-Iranian, including Indian, rice. Unlike our findings, a previous study in Tehran hospitals reported that the majority of the patients did not consume meat.[15] Restrictions on some diets also affect taste and, thus, food intake. Studies showed that being on a special diet, such as an altered texture- or a low-salt diet, doubles the risk of inadequate energy intake,[21] and people on a combination of diets have more limited food choices.[17]

Managers had a broader view of contributing factors to food quality as they cited most of the issues raised by other informants, similar to a prior study by Goonan *et al*.[22] and probably due to their wider sense of responsibility. Limitations in contract and in hiring staff and nutrition workforce, and long distance to distribution zone were other major barriers. Prescription of diets regardless of patients' conditions and requirements, temporary contracts with chefs, inconsistency of recommendations with served food, and same foods on consecutive days were main concerns regarding food quality in previous studies.[15] Walton *et al*.[17] suggested that dietitians were concerned about limited choices due to food restrictions in mixed regimens, nurses criticized a lack of variety, taste, texture, and smell, and Naithani *et al*.[23] showed that patients were dissatisfied with food because of managerial, physical, and environmental barriers.

Reducing portion size was supposed to decrease waste.[24] Patients should be able to select portion size and request extra food/meals, and enrichment is necessary for patients with special needs or a long-term stay.[17] We do not suggest portion size reduction as a solid way to improve quality. Food decoration, good hygiene, high-quality materials, optimal temperature, serving side dishes, considering the patient's taste, and diversity might be other options, as confirmed by previous studies.[25] Skillful staff, upgraded distribution, committed supplier, and budget increment were other executive strategies. Dietician numbers were not in accordance with national standards of Ministry of Health, as previously supposed,[15] since hospitals authorities try to make up for nutritionists shortage through other staff (mainly nurses), who are unaware of nutrition principles. Based on the evidence, non-nutritionist staff, like nurses, do not pay much attention to patients' nutritional status, possibly due to a lack of human resources, time, and education.[26,27] Recruiting nutrition experts would be another approach to raising food quality and nutritional care.

Strengths and limitations of study

A potential strength was a diverse profile of informants. The COVID-19 pandemic disrupted the interviews. Due to serving foods in disposable containers, we could not study the potential impact of serving methods. Heavy workload and an unfavorable disease condition limited participation. Although we tried to interview in a private space, other people (patients, companions, or staff) might disrupt it. Fear of conveying comments and divulging names may

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affect responses, therefore, we assured confidentiality of the answers.

Overall, food taste, appearance, cooking methods, materials, containers, diversity, side dishes, hygiene, temperature, and quantity were important contributors to the quality, and a lack of nutrition and kitchen workforce, contract limitations, and economic problems were key obstacles.

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Conflicts of interest

There are no conflicts of interest.

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