REDUCTION OF FOOD COSTS AND WASTE IN PRE-PREPARATION OF MEALS BY IMPLEMENTING TECHNICAL TOKENS IN A FORTALEZA-CEARÁ FOOD AND NUTRITION UNIT

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Abstract: The Food and Nutrition (HFS) is a unit which develops activities related to food and nutrition, providing safe meals. To reduce waste, it can be used to produce sheet (FTP) that it is an effective tool for the control of production of foodstuffs both in financial as well as nutrition. This work aims to standardize and reduce waste in the pre-preparation and cost of preparations by deploying factsheets on a Power Unit Nutrition business in Fortaleza-Ceará. This is an observational study, prospective, descriptive quantitative, with six days of execution. The fact sheets were made of five (5) dishes present in the unit in which menu was composed of entrance, main dishes, base plate, trim and desserts. Among the FC obtained in this study there was a significant variation in the results available in the literature, making it possible to compare the losses, evaluation of raw materials, storage, receipt and hand labor used. With the reduction of factors, therefore there was a reduction in the cost of the preparation of the meals, as FC interfere with cost values, the sales price is an important factor in determining the profit of the company. Based on the data presented, it is concluded that this data sheet is a very important tool for the units of food and nutrition, it provides a reduction in waste and cost of preparations, and contribute to the choice of supplier, upon receipt, storage , handling, assisting in the planning of purchasing, control production costs and providing a standard and quality of meals.

Keywords: Technical, preparations Cost, Waste

INTRODUCTION

With the growth of food “away from home”, there was a growth in the competitiveness of companies, which today are inserted in a globalized, dynamic scenario with more demanding consumers, consequently the need for product quality (meals). Maintaining production with efficiency and productivity combined with highly effective cost management is one of the biggest challenges for business management, but factors related to the survival of the company in the competitive market are related to the way it organizes and plans its business (VILANOVA and RIBEIRO, 2011).

The Food and Nutrition Unit (UAN) is a unit that develops activities related to food and nutrition, providing safe meals, from the hygienic and sanitary point of view and nutritionally balanced, seeking to satisfy the target audience with the service offered (TEIXEIRA, 2010; PIAZZA, 2009). During the preparation of these meals, food waste may occur, both in the pre-preparation (GOES; VALDUGAB; SOARES, 2013), as well as in storage, cooking and distribution, including raw materials and other resources (CAOBIANCO; JANZANTTI; SANTOS, 2013).

To reduce waste, the production technical sheet (FTP) can be used, which is an efficient instrument for controlling the production of foodstuffs both from a financial and nutritional aspect, making it possible to survey costs, order preparation and calculate nutritional value, discriminating all ingredients and types of equipment and utensils to be used. describing all the stages and processing time, in addition to detailing the pre-preparation technique for each preparation (AKUTSU, 2005).

The waste indicator called Correction Factor (FC) is the factor that determines the exact amount of food that will be discarded during preparations and should be used when quantitatively planning a menu and its genres. The evaluation of the supplier and the type of product must be taken into account, otherwise there may be frequent variations in this factor. Therefore, food losses will vary depending on some factors such as: type of food, quality, degree of ripeness, techniques used in pre-preparation and skill of the handler (CAMARGO; BOTELHO, 2005).

The standardization of the production process favors the work of the nutritionist, facilitating the training of employees, daily planning, as well as the execution of tasks performed, eliminating doubts at the time of production, providing more safety in the work performed (VIEIRA, 2011). Production determines the process of modifying the factors of production into products for sale in the market, and the company manages the purchase of raw materials (VASCONCELLOS; TROSTER, 2009). The results through the standardization of preparations can be perceived through the guarantee of the quality of services, gains in productivity, reduction of waste, reduction of the cost of preparations and low-cost meals (BRADACZ, 2003).

The performance of production management in the industry is extremely important for cost

control, providing data for the establishment of standards, budgets and other forms of forecasting. It follows the events in the long term, comparing them with the previous ones, making it possible to project the expenses in future productions (VILANOVA and RIBEIRO, 2011).

Waste control is a factor of great relevance in the administration of a UAN, as it is an ethical and economic issue with political and social consequences (VALENTE, 2003). Thus, trained professionals are needed to prevent losses and to control the production stages, generating quality and profit through the product (PINHEIRO, 2011).

This work aims to standardize and reduce waste in the pre-preparation and cost of preparations through the implementation of technical sheets in a commercial Food and Nutrition Unit in Fortaleza-Ceará.

METHODOLOGY

This is an observational, prospective, descriptive study of quantitative nature, with 6 days of execution, carried out in a commercial U.A.N., located in Fortaleza-Ceará, operating from Monday to Saturday from 6:00 a.m. to 9:00 p.m.

The technical sheets of 5 (five) dishes were prepared present in the unit's menu, which consisted of starter, main courses, base course, garnish and desserts.

In the unit there were no records of recipes, relying only on the memory of cooks and assistants for the preparations made. The FTPs were prepared by the local Food Engineer at the beginning of the project (annex 1). The foods were selected and separated according to each preparation. Then, they were weighed to record the Gross Weight (CP) and cleaned to obtain the Net Weight (PL), and with the values of both it was possible to calculate the Correction Factor (FC), expressed by the equation FC=CP/PL. It is defined as the relationship between the weight of the raw food, that is, in the way it was acquired, with seeds, stalks, peels, and the weight of the liquid food, after going through a cleaning process and whenever its value is greater than 1, indicates that losses have occurred. It is an indicator that determines

the amount of food that will be wasted and that should be applied in the quantitative planning of a menu and, consequently, in its nutritional value (LEMOS; BANKS; AKUTSU, 2011; DOMENE, 2001).

The FC was standardized according to the unit's production, that is, CP and LP were collected three times from the same food through the manipulation of the employee responsible for the production of the meals, thus obtaining an average of the factor and making it possible to evaluate the waste of inputs in the pre-preparation before and after the intervention, and the evaluation of the cost of waste during pre-preparation. The criterion for choosing foods for data comparison and analysis was based on factors that presented values greater than 1, as results above this value indicate that there were losses (DOMENE, 2011).

Before the implementation of the technical sheets, the waste of fruits, vegetables, legumes and meats was recorded in spreadsheets for possible comparisons after the intervention, containing the individual foods of each preparation with CP and net LP values, respectively. After the implementation of the FTPs, the reduction of waste was evaluated through the reduction of the FC of the food and the reduction of the cost of preparation (Table 3).

RESULTS AND DISCUSSION

The technical sheets of 5 dishes present in the unit's menu were prepared, which consisted of a starter (leaf salad), a main course (Sun-dried Meat with Onions), a base dish (Boiled White Rice), a garnish (Cooked Spaghetti Pasta) and a dessert (Quindim).

At first, it was possible to detect failures in the pre-preparation of meals due to the absence of standardization of the dishes. CF was extremely important to evaluate losses during pre-preparation, which were associated with labor, quality of raw material, receipt and storage (tables 1 and 2).

Assessing food losses is of paramount importance for the management of a UAN, which helps in the planning and preparation of balanced, nutritious, healthy and safe meals from the perspective of hygiene, helping in the development of healthy eating habits (LEMOS; BANKS; AKUTSU, 2011).

The U.A.N. must develop a specific correction factor table according to the unit, as there are steps in the process that can interfere with the value, such as the quality of the food, storage, service labor, training and awareness of the team, utensils and equipment used, thus ensuring safety and the quantity to be purchased (GOES; VALDUGAB; SOARES, 2013).

Table 1: Correction factor for foodstuffs greater than 1 collected before the implementation of production technical data sheets in a Food and Nutrition Unit in Fortaleza, 2016.

Food	Fc1	Fc2	Qf3	Average
Curly Lettuce	1,70	1,64	1,75	1,69
Beetroot	1,57	1,61	1,64	1,60
Carrot	1,60	1,42	1,65	1,55
Onion	1,13	1,20	1,10	1,14
Coriander	1,50	1,40	1,50	1,50
Chives	1,57	1,56	1,58	1,57
Cucumber	1,60	1,58	1,48	1,54
Green pepper	1,15	1,25	1,45	1,28
Tomato salad	1,35	1,39	1,45	1,40
Orange	3,30	3,42	3,52	3,41
Sunshine Meat	1,13	1,09	1,06	1,09

Table 2: Correction factor for foodstuffs greater than 1 collected after implementation of production technical data sheets in a Food and Nutrition Unit in Fortaleza, 2016.

Food	Fc1	Fc2	Qf3	Average
Curly Lettuce	1,59	1,50	1,53	1,50
Beetroot	1,39	1,32	1,20	1,30
Carrot	1,56	1,44	1,51	1,50
Onion	1,10	1,15	1,05	1,11
Coriander	1,48	1,40	1,50	1,46
Chives	1,30	1,32	1,22	1,28
Cucumber	1,50	1,46	1,60	1,52
Green pepper	1,30	1,26	1,20	1,25
Tomato salad	1,32	1,16	1,22	1,23
Orange	3,19	3,30	3,60	3,33
Sunshine Meat	1,02	1,01	1,04	1,02

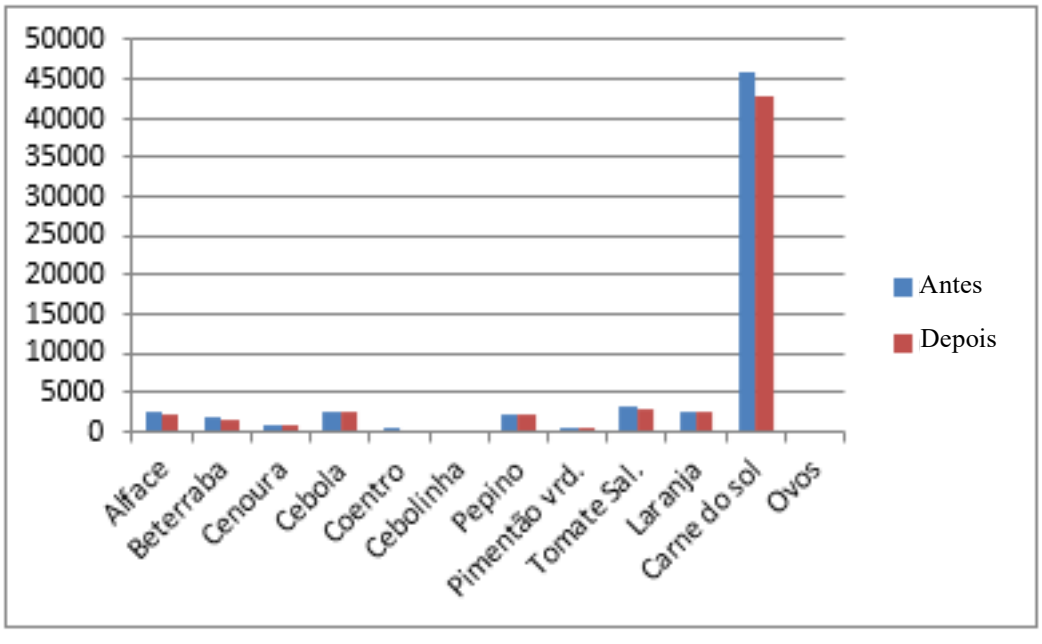
With a correction factor, it was possible to evaluate the pre-preparation stages where the greatest losses occurred, in addition to enabling the evaluation of the individual cost of the ingredients in each preparation.

During the manipulation, it was possible to observe other failures responsible for waste in the pre-preparation, such as the excessive removal of shavings and peels, poor reception conditions, quality of the raw material, in addition to fruits and vegetables with an advanced degree of ripeness. The losses were significant in some foods when compared with the previous values. Salad tomatoes, lettuce and beets were the ones that presented the highest losses when compared with the results obtained between the FVs before and after the implementation of the FTPs. Sun-dried meat was the raw material that obtained a very significant result among the others in its comparison due to the amount of shavings removed (tables 1 and 2). It is a food with a protein source, which needs to be monitored and evaluated in the pre-preparation, due to the high value that is added to it in the unit.

The foods that did not depend on the handling of the employees, but due to the variation in their weight and size, presented approximate values before and after the implementation of the technical

preparation sheets, such as oranges.

Graph 1: Comparison of the consumption of raw material used before and after the implementation of FTPs in a Food and Nutrition Unit in Fortaleza, 2016.



The Fc is important to support the UANs in the preparation of their menus, considering it as an extremely important indicator of losses, reducing waste and costs of the unit (LEMOS, BOTELHO, AKUTSU 2011).

Table 3: Mean correction factors for foodstuffs greater than 1 collected after the implementation of the production fact sheets compared with correction factors from other studies.

Food	Average FC after FTP	Goes et al	Ricarte et al	Ornellas et al
Curly Lettuce	1,50	1,35	1,60	1,09-1,33
Beetroot	1,30	1,35	1,4	1,61-1,88
Carrot	1,50	1,29	1,39	1,17
Onion	1,11	1,05	1,03	1,03-2,44
Coriander	1,46	-	-	-
Chives	1,28	-	-	-
Cucumber	1,52	1,37	1,04	1,42
Green pepper	1,25	1,24	1,36	1,26
Tomato salad	1,23	1,06	1,14	1,25
Orange	3,33	-	-	-
Sunshine Meat	1,02	-	-	-
Eggs	1,11	-	-	-

Among the CF obtained in the present study, there was significant variation in the results available in the literature, making it possible to compare losses, evaluation of raw material, storage, receipt and labor used.

Even with the reduction of the correction factor of the unit's genders after the implementation of the forms, it was observed that some foods had HR values higher or lower than those of the other studies. The HR of the unit's curly lettuce was lower than Goes et al. (2013) and Ornellas et al. (2007) and lower than Ricarte et al. (2008). Carrots and cucumbers had higher HR as reported by the authors (Table 3), making it possible to improve the factor. Green pepper showed little significant variation in relation to Goes et al. (2013) and Ornellas et al. (2007). Beets were adequate only in the recommendation of Ornellas et al. (2007) and the Fc of salad tomatoes was compatible only for Ornellas et al. (2007). In relation to the other foods, the CF was not found for the proper comparisons.

With the reduction of the factors, consequently there was a reduction in the cost of meal preparation, since the FC interferes in the cost values, in the sale price being an important factor to

determine the company's profit (SOUZA; MARSI, 2015).

Table 4: Cost of preparations before the implementation of the Production Data Sheets in a Production Unit Food and Nutrition in Fortaleza-CE, 2016.

Preparation	Previous Cost	Subsequent Cost	Reduction %
Lettuce, Tomato, Cucumber and Carrot Salad.	R$: 63,42	R$: 47,94	25%
Cooked White Rice	R$: 60,90	R$: 60,84	-
Cooked Spaghetti Noodles	R$: 43,32	R$: 42,72	2%
Sun-dried Meat Onions	R$: 1.110,96	R$: 1.040,34	7%
Quindim	R$: 41,52	R$: 41,34	-

The starter (Lettuce, Tomato, Cucumber and Carrot Salad) presented a significant cost reduction when compared to the other preparations, due to the various variations that the FC can face, this will depend on the quality of the raw material, labor, seasonality, receipt, storage and others. The cereals, such as the base dish (Cooked White Rice) and the garnish (Cooked Spaghetti Pasta), did not show significant cost changes, because their base is of foods that have their HR=1, that is, they did not present losses during the pre-preparation. The main course (Sun-dried Meat with Onions) presented a significant cost reduction, as it is a protein dish with high added value in the Unit. The reduction in the cost of this preparation is not only related to the reduction of your FC, but also to the change of raw material supplier. The dessert (Quindim) did not present changes for the Unit, as it is a preparation prepared with ready-made ingredients in which its FC=1 (pasteurized yolk, sugar, industrialized coconut and butter). (Table 4)

In a study carried out by Cabral et al. (2013), where three preparations in restaurants were evaluated, they showed variations in nutritional composition and production cost and that the variation in production cost can compromise the establishment's profit. This variation demonstrates the lack of standardization of meals.

CONCLUSION

Based on the data presented, it is concluded that the technical sheet is a tool of great importance for food and nutrition units, as it provides a reduction in waste and cost of preparations, in addition to contributing to the choice of supplier, in receiving, storage, handling, assisting in the planning of purchases, control of production costs and providing a standard and quality of meals. It is essential to train the unit's employees on the importance of the technical sheets and the evaluation of the characteristics of the raw material upon receipt, taking into account the degree of maturation, the absence of physical and mechanical damage, color and storage, in order to avoid further waste for the unit.

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