

## The Effect of Modifying Mendoan Tempeh Recipe into Tempeh Perkedel on the Acceptability of Non-Diet Patients in the Inpatient Room of Lotim Medical Center Hospital

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### Article Info

#### Article history:

Received June 16<sup>th</sup>, 2024

Revised July 9<sup>th</sup>, 2024

Accepted August 25<sup>th</sup>, 2024

#### Keyword:

Booklet; Diabetes Mellitus;  
Ramadan Fasting

### ABSTRACT

**Background:** Acceptability indicates the success of food preparation, which can be seen in food waste. Food is said to be leftover if the remaining food is >20%. The recipe modification is hoped to reduce the patient's food waste to ≤ 20%.

**Research Methods:** This research is quasi-experimental, using a one-group pretest-posttest design. Sampling in this study used a saturated sampling technique, with a sample size of 24 people in the group before modification and 27 people in the group after modification. Data were analyzed using the Independent T-test.

**Research Result:** Modifying the tempeh mendoan recipe to make tempeh patties significantly influences the average remaining tempeh before and after modification, thus affecting patient acceptance.

**Conclusion:** Modifying the tempe mendoan recipe into tempe patties can reduce the patient's food waste and increase receptivity to the tempe menu.

### BACKGROUND

The success of a hospital's food service can be assessed by the percentage of uneaten food leftovers that are discarded as waste. According to the Indonesian Ministry of Health (2008), food is said to be leftover if the leftovers are >20%. The amount of food leftovers can reduce nutritional status, prolong the length of hospitalization, and increase treatment costs.

The results of a study (Kurniawan, 2019) at the Bhayangkara H.S Samsorei Hospital in Surabaya found that the average food leftovers for patients were 59.4%. The results of a study (Siskia, 2022) at the Batin Mangunang Regional Hospital found that the average food leftovers were staple foods 20.8%, animal side dishes 26.8%, vegetable side dishes 31.4%, vegetables 28.5%, and fruit 1.3%. Likewise, research (Novianti, 2022) at the Yogyakarta Islamic Hospital PDHI found that the remaining staple foods were 45.92%, animal side dishes 38.79%, vegetable side dishes 63.16%, vegetables 33.14%, and fruit 8.33%.

Five patients received regular food Based on a preliminary survey conducted by researchers in the class III inpatient room of Lotim Medical Center Hospital. The average percentage of daily food waste was 24.3%, consisting of 18.2% of staple food waste, 13.5% of animal side dishes, 32.2% of vegetable side dishes, and 31% of vegetables. From these data, it is known that the percentage of vegetable side dish waste is still relatively high, where the remaining vegetable side dish of tempeh is 33.6% at lunch and the remaining vegetable side dish of tofu is 20.5% at evening meals.

After knowing that the vegetable side dish of tempeh had the most significant food waste, the researcher conducted a re-survey by calculating the highest vegetable side dish of tempeh in the 10-day menu cycle of Lotim Medical Center Hospital. The results showed that the median tempeh menu had the highest waste, 45.1%, in the menu cycle on day IV (afternoon meal).

On average, food waste occurs because the menu variation in vegetable side dishes is lacking, which causes respondents or patients to feel bored. According to (Dhini et al., 2022), recipe modification is a method to increase variation, reduce boredom and reduce food waste. From the background, the researcher is interested in researching "The Effect of Modifying Tempe Mendoan Recipes into Tempe Perkedel on the Acceptability of Non-Diet Patients in the Inpatient Room of Lotim Medical Center Hospital."

## RESEARCH METHODS

This quasi-experimental study applied a one-group pretest-posttest design created by measuring the patient's food waste before and after recipe modification. It was conducted from January to February 2024 at the Lotim Medical Center Hospital. The sample included the entire population, with 24 people in the pre-treatment group and 27 in the treatment group.

Food waste was measured using the food weighing method before and after modifying the tempe mendoan and perkedel tempe menus. This was done to observe patient acceptance of the menu before and after modification.

## RESULTS

### Menu Cycle and Frequency of Appearance of Vegetable Side Dish Tempeh

The menu cycle is a series of patterns or a set of menus arranged over a certain period of time and held in a specific time frame. The menu cycle used by RS Lotim Medical Center is a 10-day menu cycle plus a special menu, such as the 11th menu with a regular menu, soft food, and a special or diet menu.

The frequency of tempeh processing in the regular food menu cycle at Lotim Medical Center Hospital is processing using the method of using fat or by frying as many as nine menus and two menus using the wet heat processing method or boiling 11 times tempeh appearance in the Lotim Medical Center Hospital menu cycle. The tempeh menu processed using the fat method is the green chili using tempeh menu in the second menu cycle (breakfast time) and the fourth menu cycle (lunchtime), sweet stir-fried tempeh for the second menu cycle (lunchtime), galangal fried tempeh menu for the third menu cycle (lunchtime), the seventh menu cycle (lunchtime) and the 9th (breakfast time), mendoan tempeh menu in the fourth menu cycle (dinner time), oseng tempeh menu in the eighth menu cycle (lunchtime) and the tempeh steak menu in the particular menu cycle (dinner time). While those using the wet heat processing method are the bacem tempeh menu in the fifth menu cycle (lunchtime) and the 10th menu cycle (dinner time).

### Nutritional Value, Cost, and Processing Time of Vegetable Side Dish Tempe Before and After Modification

**Table 1. Nutritional Value, Cost, and Processing Time of Vegetable Side Dish Tempe Before and After Modification**

| Nutritional Value   |          |          |           |                    |          |          |           |
|---------------------|----------|----------|-----------|--------------------|----------|----------|-----------|
| Before Modification |          |          |           | After Modification |          |          |           |
| E<br>(kcal)         | P<br>(g) | L<br>(g) | KH<br>(g) | E<br>(kcal)        | P<br>(g) | L<br>(g) | KH<br>(g) |
| 150                 | 6,9      | 8,2      | 10,5      | 205,5              | 10,5     | 12,3     | 15,6      |
| Cost                |          |          |           |                    |          |          |           |
| Before Modification |          |          |           | After Modification |          |          |           |
| Rp. 11.000,00       |          |          |           | Rp. 10.000,00      |          |          |           |
| Processing Time     |          |          |           |                    |          |          |           |
| Before Modification |          |          |           | After Modification |          |          |           |
| 24 minutes          |          |          |           | 30 minutes         |          |          |           |

Based on the table above, the nutritional value of energy, protein, fat, and carbohydrates after modifying the Tempe Perkedel menu is higher than before modifying the Tempe Mendoan menu. The cost for the menu after modification is cheaper than before, with a difference of Rp. 10,000. When viewed from the processing time, the menu after modification or the Tempe Perkedel menu takes longer than the Tempe Mendoan menu before modification. The time measurement uses a stopwatch measuring instrument.

**Remaining Vegetable Side Dish Tempeh Before and After Modification**

**Table 2. Remaining Vegetable Tempeh Side Dish Before and After Recipe Modification**

| Average Remaining Vegetable Side Dish Tempeh |      |                    |      |
|--|------|--------------------|------|
| Before Modification                          |      | After Modification |      |
| n  | %    | n                  | %    |
| 24   | 51,0 | 27                 | 15,4 |

Based on Table 2 above, the average remaining vegetable side dish of tempeh before modification or the mendoan tempeh menu was 51.0% of 24 respondents, and the average remaining vegetable side dish of tempeh after modification or the perkedel tempeh menu was 15.4% of 27 respondents.

**Analysis of the effect of modifying the recipe for vegetable side dish of mendoan tempeh into perkedel tempeh on the acceptability of non-diet patients in the inpatient ward of Lotim Medical Center Hospital.**

**Table 3. Analysis of the effect of modifying the recipe for a vegetable side dish of mendoan tempeh into tempeh croquettes on patient acceptance.**

| Group Category      | n  | p value |
|---------------------|----|---------|
| Before Modification | 24 | 0,000   |
| After Modification  | 27 |         |

Based on Table 3 above, it is known that the results of the statistical test using the Independent t-test with a Sig. (2-tailed) value of 0.000, the results significantly impact patient acceptance of vegetable tempeh side dishes before and after recipe modification. Judging from the average remaining vegetable tempeh side dishes before modification, 51.0%, and after modification, 15.4%. So, patient acceptance before modification for the mendoan tempeh menu is 49%, which is included in the category of poor patient acceptance (<80%). Patient acceptance after modification for the tempeh perkedel menu is 84.6%, which is included in the category of good acceptance (≥80%).

**DISCUSSION**

**Menu Cycle and Frequency of Appearance of Vegetable Side Dish Tempeh**

RS Lotim Medical Center uses a 10-day menu cycle plus a special menu, such as the 11th menu with a regular or non-diet menu and a special or diet menu. The first menu cycle will be implemented on the 1st, 11th, and 21st of each month; later, the second menu cycle will be implemented on the 2nd, 12th, and 22nd. The third menu cycle will be implemented on the 3rd, 13th, and 23rd. Until the 10th menu, there will be a repeat; then, the 11th menu cycle will be explicitly implemented on the 31st as a Special menu.

The frequency of processing the tempeh side dish menu is less diverse or less varied; almost all tempeh menus are processed using the fat or fried method, and several tempeh menus are repeated at close times. The lack of variation in the technique of processing tempeh ingredients and the repetition of the menu can make respondents, or patients feel bored with tempeh dishes so that patients can leave high food. This follows research conducted by Saskia et al. (2018) if the high food waste for vegetable side dishes is due to the repetition of those done on closed days.

**Nutritional Value, Cost, and Processing Time of Vegetable Side Dish Tempe Before and After Modification**

Regarding nutritional content, the modified tempeh perkedel menu has a higher nutritional value than the mendoan tempeh menu. This is influenced by the ingredients and spices used in its processing. The number of portions produced per recipe also affects the nutritional value. One mendoan tempeh recipe with the main ingredient of 300 grams of tempeh produces nine mendoan tempeh pieces with an irregular weight or not by the standard portion in the hospital. In contrast, one tempeh perkedel recipe with the main ingredient of 300 grams of tempeh produces six tempeh perkedel pieces weighing 50 grams/piece according to the standard portion in the hospital. So, the tempeh perkedel menu is more extensive than the mendoan tempeh menu, which affects its nutritional value.

In terms of cost, the modified tempeh perkedel menu requires a cheaper cost than the menu before modification/tempeh mendoan, which is a difference of Rp. 1000, which means the price has decreased from before the modification. This is due to the exchange of ingredients for the processing process. The tempeh mendoan menu requires more main ingredients, such as tempeh, seasoned flour, wheat flour, rice flour, and spring onions, while the tempeh perkedel menu only requires tempeh and wheat flour as the main ingredients.

In terms of processing time, the modified tempeh perkedel menu takes longer than before the modification of the mendoan tempeh menu because the tempeh perkedel menu requires two processing techniques, namely steaming and frying, to remove the unpleasant odor of the tempeh; in addition, the tempeh perkedel processing process takes time to form the dough into a flower shape to attract appetite so that patients can finish or not leave food. This follows research conducted (Widyasari, 2021) at Bondowoso Hospital, which found that food served attractively with cute shapes can increase patients' appetite so that they can finish the dish. The shape or appearance of the food is one of the first things respondents pay attention to when food is served. The appearance of food that looks attractive when served later attracts the sense of sight, so it can increase patients' appetite when consuming Hospital food. The shape of the food also makes it more attractive, and it is generally served in a special form that can bring out personal appeal for all the food served (Hartati et al., 2022).

### **Remaining Vegetable Side Dish Tempeh Before and After Modification**

The results of the study presented in Table 2 show that the average remaining vegetable side dish of tempe mendoan before modification was 51.0% of 24 respondents, and the average remaining vegetable side dish of Tempe perkedel after modification was 15.4% of 27 respondents. The percentage of food waste can assess the success of a food service in a hospital. According to the minimum hospital service standards approved by the Indonesian Ministry of Health (2008), food waste should be less than or not equal to 20%. Based on these data, it is known that the remaining vegetable side dish was >20% before modification. Based on the results of interviews conducted with several respondents before modification, the tempe mendoan menu tasted bland and had a hard texture. When viewed from the dish's appearance, it was not attractive, making patients/respondents not finish the menu. The results of interviews conducted when the menu had been modified showed that half of the patients stated that the Temple Perkedel menu was quite attractive; the shape was cute, the appetite increased, and the food tasted good.

### **Analysis of the effect of modifying the recipe for vegetable side dish of mendoan tempeh into perkedel tempeh on the acceptability of non-diet patients in the inpatient ward of Lotim Medical Center Hospital.**

The study's results in Table 3 show a significant influence between the remaining vegetable side dishes of tempeh in the group before and after modification in patients who received a non-diet menu. The average remaining vegetable side dishes of tempeh before modification was 51.0% and after modification 15.4%, so the patient's acceptance before modification for the mendoan tempeh menu was 49%, which was included in the category of poor patient acceptance (<80%). At the same time, the patient's acceptance after modification for the tempeh perkedel menu was 84.6%, which was included in the category of good acceptance (≥80%). Based on the explanation above, it can be concluded that modifying the mendoan tempeh recipe into tempeh perkedel can reduce patient food waste so that patient acceptance increases for the tempeh menu due to variations in ingredients, taste, texture, shape, and increased nutritional value.

### **CONCLUSIONS**

Modifying the recipe for mendoan tempeh into perkedel tempeh can reduce the patient's food waste, thereby increasing the patient's acceptance of the tempeh menu.

### **SUGGESTION**

A menu evaluation must be conducted every three months to reduce food waste and increase patient acceptance of the menu served.

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