

# The Effect of Modifying Vegetable Side Dishes on The Taste and Acceptability of Food in Patients with a Regular Food Diet in The Morning Meal Menu

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Article Info	ABSTRACT
<b>Article history:</b> Received January 9 <sup>th</sup> , 2025 Revised February 11 <sup>th</sup> , 2025 Accepte March 27 <sup>th</sup> , 2025	<b>Background:</b> <i>The amount of leftover food measures the accomplishment of food service. High food leftovers are defined as leaving more than 25%. High food leftovers result in inadequate nutritional intake and a wasted hospital budget, hence the need for modification. Based on preliminary research conducted on Friday, March 8, 2024, on 10 patients with a regular diet, the average leftover vegetable side dish (tempeh stew) was 38.93%, with breakfast having the highest leftover percentage. The taste variable was measured using a taste questionnaire, and acceptability was measured using food weighing.</i>
<b>Keyword:</b> Acceptability; Vegetable Side Dish; Taste;	<b>Research Methods:</b> <i>This research is pre-experimental. The research design was a one-group pretest-posttest conducted at the Az-Zahra Hospital from May 30 to June 3, 2024. The sampling technique was purposive sampling. The sample consisted of all Class III patients on a regular diet, totaling 72 respondents. Bivariate analysis used the Gamma test for taste and acceptability variables in this research.</i>
	<b>Research Result:</b> <i>The results showed that there is an effect of vegetable side dish modification on taste and acceptability in the aspect of (Color) with (p-value 0.001), (p-value &lt;0.05). (Texture) with (p-value 0.007), (p-value &lt;0.05). (Aroma) with (p-value 0.001), (p-value &lt;0.05). However, there was no effect on (Shape) with (p-value 0.707), (p-value &gt;0.05). No impact on (Taste) with (p-value 0.463), (p-value &gt;0.05).</i>
	<b>Conclusion:</b> <i>Based on the research results, it can be concluded that vegetable side dish modification affects the taste and acceptability of food. Az-Zahra Hospital is expected to Be able to apply the modified recipes with more variations in shape and taste.</i>

## BACKGROUND

food waste is an essential but straightforward indicator to measure the success of an institution in the hospital because it will show that the food served is substandard if there are many leftovers. The success of food delivery in an institution can be seen from its acceptability. As defined by Mangalik et al. (2020), acceptability is the ability of a person to eat what is served without leaving any of the food. If someone leaves more than 25% of their food, then food waste is said to be high (Suhendra, 2022)

From an economic point of view, if a hospital institution has a lot of wasted costs, it will have a negative impact on the budget used for food procurement, especially on food service costs. In addition, the high amount of food waste will result in insufficient nutritional needs of patients. Therefore, it is necessary to change the recipe to reduce food waste (Ronitawati et al., 2021).

According to Sari et al. (2019), one way to improve menu quality regarding taste, color, aroma, texture, and nutritional value is to change recipes. The goal is to change the nutritional value of food, reduce boredom, and improve the taste of food. In addition, an institution can use recipe modification as a resource to increase menu diversity. Therefore, adjustments must be made if you want patients to receive more food. (Indonesian Ministry of Health, 2018 in Irfanny, 2017)

Food will taste better if the recipe is modified. The five senses of taste, smell, touch, sight, and hearing work together to create taste, including appearance, aroma, flavor, and texture. There are two aspects of food taste: appearance and flavor. The appearance point of view is assessed when the food is served and not eaten, including variety, shape, size, and aroma. Meanwhile, the flavor's extent is assessed after eating and entering the mouth. Flavor, appearance, temperature, and degree of doneness are some of its components (Ministry of Health of the Republic of Indonesia, 2018).

Based on preliminary studies carried out at the Az-Zahra Kalirejo Hospital on Friday, March 8, 2024, food waste data has been collected. In 10 patients with a regular food diet, the average food waste results are vegetable side dishes tempeh stew 38.93%, with the percentage of morning meal time leaving the most vegetable side dishes, namely 58.6%, which can be interpreted as the remaining food being > 25% (Suhendra, 2022).

## RESEARCH METHODS

This study is entitled "The Effect of Modification of Vegetable Side Dishes on Taste and Food Acceptability in Patients with Regular Food Diet Morning Meal Menu at Rsu Az-Zahra Kalirejo." This type of research is pre-experimental research. Because this study only uses one treatment group, where there is no control or treatment group. The design in this study used a one-group pretest-posttest research design. The pretest is given before the intervention (modified vegetable side dishes), and the posttest is given after the intervention. The sample in this study were class III inpatients in the room (Anisa, Araudah, and Arafat) with a regular food diet or without infection and a special diet at the Az-Zahra Kalirejo Hospital with the number of samples calculated using the Lemeshow formula (1997), namely 72 samples.

This study was conducted to determine the effect of modified vegetable side dishes on the flavor and acceptability of food in patients with regular food diets. The flavor variable was measured using a flavor questionnaire, and the acceptability variable was measured using a digital food weighing scale where the flavor variable has five aspects consisting of (Color, Texture, Shape, Aroma, and Taste) with an assessment method of 1 Dislike, 2 Moderately like, 3 Like 4 Very like.

Univariate analysis was conducted to determine the mean and standard deviation (SD) and to see the frequency distribution of the Taste of RS food and modified vegetable side dishes and the acceptability of vegetable side dishes, while bivariate analysis aimed to see the effect of modified vegetable side dishes on taste and acceptability using the Gamma test.

The instruments used in this study are:

Informed consent

Digital food scales with Nankai brand with 0.1g accuracy.

Food weighing form

Flavor assessment form

## RESULTS

### Univariate Analysis

**Table 1. Frequency Distribution of RS and Modified Vegetable Side Dish Flavors**

Flavors	Vegetable side dishes RS				Modified vegetable side dish			
	Dislikes	Quite like	Like	Very like	Dislikes	Quite like	Like	Very like
Color	10 (13,9%)	37 (51,4%)	21 (29,2%)	4 (5,6%)	0 (0%)	22 (30,6%)	39 (54,2%)	11 (15,3%)
Texture	15 (20,8%)	31 (43,1%)	24 (33,3%)	2 (2,8%)	0 (0%)	32 (44,4%)	33 (45,8%)	7 (9,7%)
Shape	11 (15,3%)	35 (48,6%)	25 (34,5%)	1 (1,4%)	7 (9,7%)	32 (44,4%)	27 (37,5%)	6 (8,3%)
Taste	21 (29,2%)	33 (45,8%)	14 (19,4%)	4 (5,6%)	0 (0%)	5 (6,9%)	33 (45,8%)	34 (47,2%)
Aroma	20 (27,8%)	31 (43,1%)	17 (23,6%)	4 (5,6%)	0 (0%)	17 (23,6%)	28 (38,9%)	27 (37,5%)

Table 1 shows that the Taste of RS vegetable side dishes in Most color categories are quite liked, with as many as 37 (51.4%). Most RS vegetable side dish flavors in the texture category were Moderately liked by as many as 31 (43.1%). Taste of RS vegetable side dishes Most of the shape categories were moderately liked by 35 (48.6%). Taste of RS vegetable side dishes Most of the taste categories were moderately liked by 33 (45.8%). Taste of RS vegetable side dishes Most aroma categories were moderately liked by 31 (43.1%). Taste of Modified vegetable side dishes Most of the Color category Likes 39 (54.2%). Taste of Modified vegetable side dish Most of the Texture category Likes 33 (45.8%). Taste of Modified vegetable side dishes Most of the categories of Form Moderately Like as many as 32 (44.4%). Taste of Modified Vegetable Side Dishes Most of the Taste category Likes 33 (45.8%). Taste of Modified vegetable side dishes Most of the Aroma category Likes as many as 28 (38.9%).

**Table 2. Frequency Distribution of Acceptability of Hospital and Modified Vegetable Side Dishes**

	Acceptability of Hospital Vegetable Side Dishes	Acceptability of Modified Vegetable Side Dishes
Less Good (Acceptability > 25%)	70 (97,2%)	37 (51,4%)
Good ( Acceptability <25%)	2 (2,8%)	35 (48,6%)

Based on Table 2, the acceptability of RS vegetable side dishes is known. As many as 70 (97.2%) respondents have poor acceptance. In modified vegetable side dishes, as many as 35 (48.6%) respondents have good acceptance.

### Bivariate Analysis

**Table 3. Gamma Test Results**

Hospital Vegetable Side Dishes	<i>p-value</i>	Modified Vegetable Side Dish	<i>p-value</i>
Colo	0,435	Colo	0,001
Texture	0,884	Texture	0,007
Shap	0,149	Shap	0,707
Taste	0,839	Taste	0,463
Aroma	0,310	Aroma	0,001

Based on Table.3 It is known that the hospital vegetable side dish color aspect with a p-value of 0.435 ( $>0.05$ ) means that there is no influence on the color aspect of the hospital vegetable side dish. It is known that the texture aspect of the hospital vegetable side dish with a p-value of 0.884 ( $>0.05$ ) means that there is no influence on the texture aspect of the hospital vegetable side dish. It is known that the hospital vegetable side dish shape aspect with a p-value of 0.149 ( $>0.05$ ) means that there is no influence on the shape aspect of the hospital vegetable side dish. It is known that the hospital vegetable side dish aspect Taste with a p-value of 0.839 ( $>0.05$ ) means that there is no influence on the taste aspect of the hospital vegetable side dish. It is known that the hospital vegetable side dish aspect Aroma with a p-value of 0.310 ( $>0.05$ ) means that there is no influence on the Aroma aspect of the hospital vegetable side dish. It is known that the modified vegetable side dish aspect color with a p-value of 0.001 ( $<0.05$ ) means that there is an influence on the color aspect of the Modified vegetable side dish. It is known that the Modified vegetable side dish texture aspect with a p-value of 0.007 ( $<0.05$ ) means that there is an influence on the texture aspect of the Modified vegetable side dish. It is known that the shape aspect of the modified vegetable side dish with a p-value of 0.707 ( $>0.05$ ) does not influence the shape aspect of the modified vegetable side dish. It is known that the Modified vegetable side dish aspect of taste with a p-value of 0.463 ( $>0.05$ ) means no influence on the taste aspect of the Modified vegetable side dish. It is known that the Modified vegetable side dish aspect of aroma with a p-value of 0.001 ( $<0.05$ ) means that there is an influence on the Aroma aspect of the Modified vegetable side dish.

## DISCUSSION

### Respondent Characteristics

Based on the research results conducted at RSu Az-Zahra Kalirejo, most respondents are  $<45$  years old, as many as 38 (52.8%). Moreover, most of them are female, as many as 47 (65.3%). Moreover, most of the dyspeptic diseases were 21 (29.2%). According to (Galleta in Mangalik 2020), food acceptance by women is lower than men due to differences in energy needs, where women have lower basal calorie needs than men. Based on Waruwu's research in 2017, 22 respondents were female (73.3%). The RDA is mainly in the age group 19-29 years, namely 22 respondents (73.3%). As a person ages, their body, mind, and appetite all change. In adulthood, changes in lifestyle, activity, and stress can affect a person's food intake.

### Effect of Modified Hospital Vegetable Side Dish Recipes and Modified Vegetable Side Dishes on Taste (Color, Texture, Shape, Taste, Aroma) and Acceptability in Patients with Regular Food Diets Breakfast Menu

It is known that the Taste of RS vegetable side dishes in the aspect of color "Quite like" 37 respondents (51.4%) are not well accepted. The percentage of color (97.3%) with a p-value of 0.435 ( $>0.05$ ) means that there is no effect on the color aspect of RS vegetable side dishes. After being given the Modified Vegetable Side Dish menu on the color aspect "Like," 20 respondents (57.1%) have good acceptance, and the percentage of color (51.3%) with a p-value of 0.001 ( $<0.05$ ), meaning that there is an influence on the color aspect of the Modified vegetable side dish.

It is known that the flavor of the RS vegetable side dish in the texture aspect "Quite like" 31 respondents (44.3%) are not well accepted. The percentage of texture (100.0%) with a p-value of 0.884 ( $>0.05$ ) means that there is no effect on the texture aspect of the RS vegetable side dish. After being given the Modified Vegetable Side Dish menu on the Texture aspect "Like," 18 respondents (51.4%) have good acceptance, and the percentage of texture (54.5%) with a p-value of 0.007 ( $<0.05$ ), meaning that there is an effect on the texture aspect of the Modified vegetable side dish.

It is known that the flavor of hospital vegetable side dishes in the aspect of shape "Quite like" 35 respondents (50.0%) are not good in acceptance, with a percentage of shapes (100.0%) with a p-value of 0.149 ( $>0.05$ ), meaning that there is no effect on the aspect of the shape of hospital vegetable side dishes. However, after being given the hospital vegetable side dish menu, the shape aspect "Quite like" 18 respondents (51.4%) had good acceptance, with a percentage of shapes (56.2%) with a p-value of 0.707 ( $>0.05$ ), meaning that there is no effect on the shape aspect of vegetable side dishes after modification.

It is known that the taste aspect of RS vegetable side dishes "Quite like" 33 respondents (47.1%) are not well accepted, with a percentage of taste (100.0%) with a p-value of 0.839 ( $>0.05$ ), meaning that there is no effect on the taste aspect of RS vegetable side dishes. However, after being given the Modified vegetable side dish, the taste aspect of "Very like" 18 respondents (51.4%) had good acceptance, with a percentage of

Taste (52.9%) with a p-value of 0.463 ( $>0.05$ ), meaning that there was no effect on the taste aspect of the Modified vegetable side dish.

It is known that the flavor of the RS vegetable side dish aspect of Aroma "Quite like" 30 respondents (42.9%) are not well accepted, with a percentage of aroma (96.8%) with a p-value of 0.310 ( $>0.05$ ), meaning that there is no effect on the Aroma aspect of the RS vegetable side dish. After being given the Modified vegetable side dish menu, the Aroma aspect is "Very like" 18 respondents (51.4%) have good acceptance, with a percentage of aroma (66.7%) with a p-value of 0.001 ( $<0.05$ ), meaning that there is an influence on the Aroma aspect of the Modified vegetable side dish.

So, there is an increase in taste (Color, texture, aroma) when vegetable side dishes are modified. As for some comments submitted by respondents, among others, RS vegetable side dishes in terms of color are less attractive and "too pale," so there is an increase after the modification. Respondents prefer modified dishes. However, there is no effect of modification in terms of shape due to the RS standard dish, and the dish after being modified has the same shape, so there is no difference. Therefore, there is no effect in terms of shape. There is no influence in the taste aspect because, in the tempeh croquette recipe, the ingredients used are more dominant than other ingredients, so it does not change the aspect of taste when vegetable side dishes before modification and after modification.

According to Lisara's research (2021), which is quoted from Dedoussis' theory, vegetable side dishes such as tempeh and tofu are usually only steamed with yellow spices in the hospital. Therefore, patients have no appetite or desire to consume vegetable side dishes, so there is food waste, especially vegetable side dishes, so patients do not fulfill their nutritional intake.

This is in line with Sugiyanto's research (2022) on the effect of modifying soft diet vegetable side dish recipes on patients' liking and food waste in Hospital D. The research findings in Table 4 show how the Wilcoxon test affects the aspects of shape having a p-value of 0.035, presentation having a p-value of 0.020, aroma having a p-value of 0.032, taste having a p-value of 0.018, and temperature having a p-value of 0.015. Although some parameters are insignificant, the positive value is greater than the negative value, indicating that respondents prefer modified tempeh dishes. Although some parameters are insignificant, the positive value is greater than the negative value, indicating that respondents prefer modified tempeh dishes.

Based on Dwi Pangesti's research (2021), 10 journals revealed that tempeh recipe modification affects food acceptability with a value of  $p < 0.05$ . Based on all the journals studied, tempeh processing techniques, after being modified, are more varied, such as burning, grilling, frying, or steaming. Menus processed with different seasonings than before the modification are also known to have a better taste for the average client. There is an effect with a p-value of 0.001

## CONCLUSIONS

There is an influence on aspects (Color, Texture, Aroma), but there is no influence on aspects (Shape and Taste) because the RS standard dish and the dish after being modified have the same shape, so there is no difference. Therefore, there is no influence in terms of shape. There is no influence in the taste aspect because, in the tempeh croquette recipe, the ingredients used are more dominant than other ingredients. So, it does not change the taste of vegetable side dishes before or after modification.

## RECOMMENDATION

The hospital can apply the modified recipes that have been made. The acceptable modification of the recipes that have been carried out can help minimize the budget due to wasted food waste. However, with a note, the shape can be further varied because there is no influence on the aspect of form. In terms of taste, it can also be more creative so that the raw material of tempeh is not too dominant to increase appetite.

For future researchers, researchers should continue with new variables that have not been studied, such as the difference between the Rs standard vegetable side dish menu recipe and the modified vegetable side dish menu recipe in terms of the cost budget.

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