Effect of modification of nutrition counseling by using diet message sticker on food waste of inpatients

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ABSTRAK

Latar belakang: Asuhan gizi rumah sakit diberikan kepada pasien berdasarkan hasil asesmen, termasuk kondisi klinis. Salah satu faktor yang mendukung kepatuhan diet pasien di rumah sakit adalah edukasi gizi. Stiker pesan diet dapat digunakan sebagai alat bantu untuk pemberian edukasi terhadap pasien.
Tujuan: Untuk menganalisis pengaruh pemberian stiker pesan diet terhadap sisa makanan pasien rawat inap.
Metode: Penelitian ini merupakan penelitian eksperimental dengan desain perbandingan kelompok statis. Sebanyak 220 responden diambil secara acak, dibagi menjadi kelompok kontrol (tanpa stiker diet) dan kelompok intervensi (diberi diet stiker). Stiker pesan diet diberikan kepada kelompok intervensi selama 1 hari dalam siklus menu ke-8. Stiker pesan diet ditempelkan di plato dan materinya disesuaikan dengan diet yang diberikan oleh ahli gizi rumah sakit. Sisa makanan diketahui menggunakan metode Visual Comstock berskala 6 poin. Data dianalisis univariat dan bivariat menggunakan uji-T independen.
Hasil: Rata-rata sisa makanan pada kelompok intervensi berdasarkan masing-masing komponen makanan adalah 28,62 ± 28,62% pada buah, 23,24 ± 23,24% pada sayuran, 22,38 ± 20,87% pada makanan pokok, 22,30 ± 22,69% pada lauk nabati, dan 20,75 ± 22,38% pada lauk hewani. Sedangkan rata-rata sisa makanan pada kelompok kontrol adalah 44,89 ± 44,89% pada buah, 33,32 ± 33,32% pada sayuran, 39,83 ± 29,33% pada makanan pokok, 31,67 ± 31,67% pada lauk nabati, dan 36,20 ± 31,76% pada lauk hewani. Hasil uji-T independen untuk menganalisis pengaruh pemberian stiker diet terhadap sisa makanan menunjukkan nilai p=0,000 (p<0,05) untuk semua kelompok komponen makanan.
Kesimpulan: Modifikasi konseling gizi dengan menggunakan stiker pesan diet berpengaruh terhadap sisa makanan pasien rawat inap.

KATA KUNCI: intervensi gizi, metode visual Comstock, pasien rawat inap, sisa makanan, stiker pesan diet

ABSTRACT

Background: Nutrition care in hospital was provided to the patient based on nutritional assessment result, including clinical state. One of the factors supporting the dietary compliance of inpatients is a nutritional education. Diet message sticker could be used as a tool to educate patients.
Objective: To analyze the effect of diet message sticker on food waste of inpatients.
Methods: This was an experimental study with static group comparison design. As many as 220 respondents were randomly divided into control group (without diet sticker) and intervention group (given sticker diet). Diet message stickers were given to the intervention group for 1 day in the 8th menu cycle. Diet message sticker was attached on the plateau and the material was adjusted to the diet provided by the dietitian. Food waste was obtained by the Visual Comstock method with 6 point scale. Data was analyzed univariate and bivariate using independent T-test.
Results: The average food waste in the intervention group which based on each food component were 28.62±28.62% in fruit, 23.24 ± 23.24% in vegetable, 22.38 ± 20.87% in staple food, 22.30 ± 22.69% in vegetable side dish, and 20.75 ± 22.38% in animal side dish respectively. While the average food waste in the control group were 44.89 ± 44.89% in fruit, 33.32 ± 33.32% in vegetable, 39.83 ± 29.33% in staple food, 31.67 ± 31.67% in vegetable side dish, and 36.20 ± 31.76% in animal side dish respectively. The

result of the independent T-test to analyze the effect of applying diet message stickers to food waste showed p-value=0.000 (p<0.05) for all food component groups.
Conclusion: *Modification of nutritional counseling by using diet message sticker affects on food waste of inpatients.*

KEYWORDS: *diet message sticker; dietary intervention; food waste; inpatient; visual comstock method.*

INTRODUCTION

Hospital nutrition service is provided and adapted to the patient's condition based on their clinical conditions, nutritional status and metabolic status of the body. The nutritional condition of patients is very influential in the process of healing the disease (1). Nutritional conditions affect the process of healing the disease and vice versa, the course of disease process can affect the nutritional state of the patient (2).

The diet provided by the hospital aims to increase or maintain the body's immune system and help to cure the patient from illness or injury by repairing worn or damaged tissue and restoring balance in the body (3). Nutritional support is an essential part of healing for every medical problem and this will shorten the duration of the problems.

Factors that influence the level of acceptance of a patient's food are the patient's physical condition, appetite, menu that is served and eating habits (4). Patients have a habit of consuming food that is different from the food served by the hospital.

Patient adherence to the given diet is a determining factor in hospital nutrition service activities. One way to determine patient compliance in consuming a given diet is to see food waste. Remaining food is the percentage of food served by a hospital that the patient cannot or does not want eat from one or more meals (5). More than 20% food waste indicates the failure of food service in a hospital (1).

One of the supporting factors for diet compliance is providing education about the importance of dietary roles given to help healing. Patient's knowledge about diet and dietary behavior has increased after being given health education (6). Other studies also showed an increasing of dietary knowledge and attitudes in the elderly after being educated (7). One tool that can be used as a means of providing education is a sticker that contains a diet message.

Some studies show that the percentage of food waste from patients in some hospitals is still high. The results of the research at the Jakarta Hajj Hospital showed that there were many food waste (>25%) of 39.75% of respondents (6). Research conducted at Sleman Yogyakarta Hospital on food residues on a low-salt diet showed a large amount of food waste (>25%) including 50% of plant-based side dishes, 46.9% of vegetables and staple foods and 40.6% of animal and fruit dishes (2). Research conducted on 3rd class patients at Seruni Hospital Puri Cinere Depok showed 39.7% of respondents had food waste in many categories food waste in many categories (8). The food waste thrown in the 3rd class patients hospitalized in a ward, of Salatiga Hospital, is varied: 43.86% of rice, 40% of vegetables, 34.74% of vegetable dishes, and 28.41% of animal dishes (9).

Panembahan Senopati General Hospital Bantul is a type B hospital that serves inpatient care. The remaining food based on a preliminary survey conducted in December 2015 on patients showed that food waste was still in a large category (>25%), staple food was 35.80%, animal side dishes were 30.67%, vegetable dishes were 34.67%, vegetables 39.0%, fruit 25.12%, and snacks 22.20%. This shows that nutrition service activities have not been carried out optimally.

The high residual food of the patients can lead to a longer day of care which affect on the increase in maintenance costs. The costs have to paid are included the costs of wasted food. It becomes ineffectife, only wastes money. One effort to reduce the patient's food waste is to provide nutritional counseling and motivation to patients and their families to realize that food is one of factors that support the healing process.

The counseling activity is the task of a nutritionist in the hospital. The limited number of nutritionists at Panembahan Senopati Hospital

Bantul causes nutritionists cannot visit all the inpatients every day. Some nutritionists are in charge of production, nutrition polyclinics, and administrative tasks. Therefore it is needed a communication tool between nutritionists and patients in the intervention room. The tools will substitute the role of nutriotionists to explain the importances of food served in the hospital in for the healing process. This study was conducted to determine the effect of giving diet message stickers to the food waste of inpatients.

MATERIALS AND METHODS

This was an experimental study with static group comparison design. This study involved 220 respondents which were taken using the purposive technique sampling. The study inclusion criteria included male and female inpatients whose age are >18 years, undergoing hospitalization at Panembahan Senopati Bantul Hospital during the study, and obtaining a regular diet on twice or three times.

The respondents were randomly divided into the intervention group and the control group. Each group consists of 110 respondents. Respondents in the intervention group received diet message stickers for 1 day in the 8th menu cycle. The diet message sticker was attached on in the patient plateau and contained material about the diet from the hospital. Whereas the respondents in the control group only received intervention according to standard procedures from the hospital.

The independent variable of this study is the modification of nutrition counseling using diet message sticker, whereas the dependent variable is food waste. Food waste variables were measured using the Comstock visual method with a scale of 6 points.

The data obtained were analyzed by univariate and bivariate. Univariate analysis was performed to determine the frequency distribution of each variable. Bivariate analysis was performed using the independent T–test method, because the data obtained were normally distributed after the data distribution analysis was carried out using the Kolmogorov-smirnov method.

This study has obtained ethical clearance from the Health Research Ethics Commission of the Faculty of Health Science, Universitas Respati Yogyakarta, No: 145.4/FIKES/PL/II/ 2016.

RESULTS

The characteristics of respondents in this study are shown in **Table 1**. The majority of the

Table 1. Distribution of frequency of the respondent's characteristics

Characteristics of respondent	Groups			
	Intervention		Control	
	n	%	N	%
Age (year)				
12-16	3	2.7	1	0.9
17-25	14	12.7	17	15.5
26-35	14	12.7	17	15.5
36-45	24	21.8	17	15.5
46-55	31	28.2	31	28.2
56-65	24	21.8	27	24.5
Sex				
Man	52	47.3	48	43.6
Woman	58	52.7	62	56.4
Class of intervention				
II	5	4.5	7	6.4
III	105	95.5	103	93.6
Day of care				
2	54	49.1	50	45.5
3	56	50.9	60	54.5
Education				
Primary school	18	16.4	29	26.4
Junior high school	37	33.6	23	20.9
Senior high school	45	40.9	31	28.2
College	10	9.1	27	24.5
Job				
Does not work	7	6.4	6	5.5
Housewife	27	24.5	23	20.9
Laborer	14	12.7	23	20.9
Farmer	6	5.5	7	6.4
Private employee	28	25.5	23	20.9
Government employee	3	2.7	7	6.4
Student	9	8.2	9	8.2
Entrepreneur	16	14.5	12	10.9
Porridge	74	67.3	71	64.5
Team rice	10	9.1	15	13.6
Rice	26	23.6	24	21.8

Table 2. Observation on the installation of diet message stickers in the intervention group

Variable	Frequency			
	Yes	%	No	%
Attachment of the sticker	110	100	0	0
Read of the sticker	110	100	0	0
Understanding of the sticker	110	100	0	0

respondents in this study were in the age range 46–55 years old, both of in the intervention and control groups. This study was dominated by respondents who were female, high school graduated, worked as private employees, housewives and laborers, were 3rd class care patients who hospitalized for 3 days, and consumed soft texture food or porridge as their dietary menu.

The observation's result of diet message stickers carried out in the intervention group at each meal time during the study are shown in **Table 2**. All respondents in the intervention group (100%) had diet message stickers attached on the plate (plateau). All respondents in the intervention group

(100%) had read and understood the diet message stickers, which were evaluated based on the results of interviews with respondents.

Table 3 shows that in the intervention group, the highest average food waste was fruits (28.62 ± 28.62%), followed by vegetables (23.24 ± 23.24%), staple foods (22.38 ± 20.87%) respectively, vegetable side dishes (22.30 ± 22.69%), and animal side dishes (20.75 ± 22.38%). The results in the control group were also not much different from the intervention group, the average of food waste were mostly in fruits (44.89 ± 44.89%), followed by successively followed by staple foods (39.83 ± 29.33%), animal side dishes (36.20 ± 31.76%), vegetables (33.32 ± 33.32%), and vegetable side dishes (31.67 ± 31.67%).

The average food waste of the intervention and control groups respondents are shown in **Figure 1**. The food waste is in the range 0–100%. The food waste is 100% maximum, meaning that there is no food consumed or 100% intact while the rest of the food is at least 0%, meaning that the food

Table 3. Comparison of food waste between in the intervention and control groups

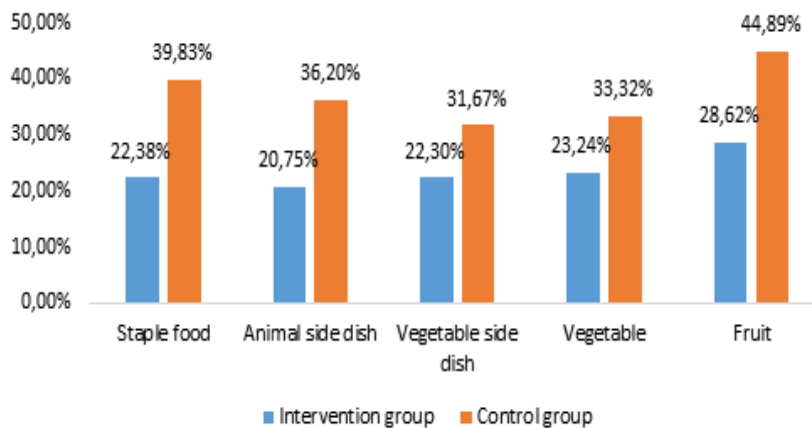| Type of food	Intervention group			Control group		
	Food waste (%)		Mean ± SD	Food waste (%)		Mean ± SD
	Min	Max		Min	Max	
Staple food	0	95.00	22.38±20.87	0	98.30	39.83±29.33
Animal side dish	0	95.00	20.75±22.38	0	100	36.20±31.76
Vegetable side dish	0	98.30	22.30±22.69	0	100	31.67±31.67
Vegetable	0	96.70	23.24±23.24	0	100	33.32±33.32
Fruit	0	100	28.62±28.62	0	100	44.89±44.89

Figure 1. Comparison of average food waste in the intervention and control groups

Table 4. The results of the independent t-test of the provision of diet message sticker to the food waste

Groups	Food waste (%)		Mean ± dev. standard	SE	P
	Minimum	Maximum			
Food waste of staple food					
Intervention	0	95.00	22.38±20.87	1.99	0.000
Control	0	98.30	39.83±29.33	2.80	
Animal side dish					
Intervention	0	95.00	20.75±22.38	2.13	0.000
Control	0	100	36.20±31.76	3.03	
Vegetable side dish					
Intervention	0	98.30	22.30±22.69	2.16	0.000
Control	0	100	31.67±31.67	3.02	
Food waste of vegetable					
Intervention	0	96.70	23.24±23.24	2.21	0.000
Control	0	100	33.32±33.32	3.18	
Food waste of fruit					
Intervention	0	100	28.62±28.62	2.73	0.000
Control	0	100	44.89±44.89	4.28	

is consumed without any residue. Maximum food waste (100%) are only found on the fruit menu. While in the control group, the food waste is in the range 0–100%. The remaining food is 100% maximum, meaning that there is no food consumed or 100% intact while the rest of the food is at least 0%, meaning that the food is consumed without any residue.

Based on the results of the analysis of food waste in the intervention and control groups, it was shown that the average percentage of food food waste in the intervention group was less than the control group all in the staple food waste, animal side dishes, vegetable dishes, vegetables and fruits. These results are supported by the results of statistical analysis using the independent t-test, which shows the value of p=0,000 (p<0.05) for differences in food food waste in the remainder of staple foods, animal side dishes, vegetable dishes, vegetables and fruits so it can be concluded that the differences in food residues were significant between the intervention and control groups (**Table 4**).

DISCUSSION

Based on the observations of the respondent's characteristics of this study, both in the control and intervention groups, it was found that the characteristics of the both group of respondents are almost similar; most of them are in the age range of 46-55 years (age category based on Ministry of Health standards in 2009), female, high school graduated, working as a private employee, housewife and laborer, 3rd class care patients who hosptalized for 3 days, and consuming soft texture food or porridge.

During the study, all respondents who were the intervention group had received a diet message sticker on each meal time. All respondents had read the contents of the diet message stickers and were able to understand the contents of the stickers. By understanding the contents of the diet message stickers, the patients were expected to know the importance of food for helping the healing process so that they would increase their food intake.

The results of this study showed that the intervention of education through the provision of diet message stickers had a significant effect on reducing the residual food inpatients. The diet message sticker which explains the important role of food from the hospital for helping the healing process were attached on the food cap (plato). Therefore, every time before eating, the patient saw the sticker and was motivated to get well soon so that food intake increased. Thus the reduction of food waste can be caused the intervention of health education through the media, that is diet message sticker.

This result is supported by the result of previous research stated that knowledge about diet and dietary behavior of patients increase after being given health education (6). In addition, an important factor that can improve compliance is motivation because the higher the motivation, the more the obedience of the patients (10). This proves that nutrition education intervention by providing diet message stickers can increase the patient's awareness and motivation to consume more food from the hospital so that there is a decrease in the percentage of food waste, compared to the control group. Similar research also mentions that nutrition education with booklet media significantly improves nutrition knowledge in elementary school children, called knowledge scores increase in children who receive nutrition education (11).

This result is in accordance with the research which states that the purpose of nutrition education is to provide nutritional information to the people in order to increase knowledge, change their attitudes and behavior (12). The new information is expected to bring changes in attitudes that result in improving the behavior or dietary practices. The nutritional counseling has helped pregnant women in the second trimester of pregnancy in the intervention group to increase food intake (calories) significantly (13).

Analysis of food waste is one way to evaluate nutrition services provided, especially food services. Evaluation of food waste is very important because food waste can reflect nutrient intake and the level of residual food can be used as an indication of poor patient health status which results in malnutrition (14). If the food residues are more than 20% It indicates the unsuccessful food delivery in hospital (1). The results of the study in the intervention group showed a significant reduction in food waste compared to the control group, although the average percentage of food waste in the intervention group was still above 20%. This is because many other factors also influence the occurrence of food waste.

Other factors that could affect food waste are internal factors (appetite, eating habits, boredom) and external factors (appearance, taste, cutlery, time of presentation). Having food from outside the hospital also affects the food waste (9). Other research also states that the success of the menu served to the patients can contribute to food waste and patient satisfaction (15).

During the study, most of the patients received a porridge menu and only a few of the patients received the soft texture rice and or the regular / rice menu. In addition, the results of the study showed that the average percentage of fruit as food waste in the intervention group and the control group was the highest. Most of the food waste remained is the fruit, because the fruit served during the study was papaya, which based on observations turned out the preparation and serving time of the fruit had a fairly long range. So that the organoleptic quality of papaya fruit is reduced, especially related to the taste changes becoming less pleasant.

The limitation of this study is that the use of menu cycles is not optimal. This study only focuses on one day in the 8th menu cycle, even though the menu cycle used in hospitals is a 10-day menu cycle. So that it does not discuss and explain the results of the assessment of the menu cycle of 10 days in the hospital.

CONCLUSION AND RECOMMENDATION

Provision of diet message stickers significantly affects the remaining food of inpatients. The nutritional education method can increase a patient's food intake, which can be seen from the reduction in food waste. The researcher recommends the hospital to apply the method of giving diet message stickers as a way to improve the quality of nutrition services for inpatients.

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