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Case Study

The Modification of Steamed Tempeh and Chocolate Soy Milk in Fulfilling Nutrition for Tuberculosis Patients

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Abstract: Objective: The purpose of this case study is to examine the effect of the application of providing steamed tempeh (fermented soybean cake) and chocolate soy milk on clients who have pulmonary tuberculosis with nutritional problems. **Method:** The research design used was descriptive research with case study method. Participants in this study were two clients who had the same nursing and medical problems which is pulmonary tuberculosis with nutritional problems. **Result:** The results showed that both participants were affected by the application of supplementary food with steamed tempeh and chocolate soy milk on weight gain and reduced complaints such as chest pain and coughing, and quality of rest was met. In addition to reduced complaints, there was also an increase in body weight in both participants. **Conclusion:** Changes in complaints and improvement in nutritional status that occurred in cases with tuberculosis were influenced by high calorie intake. In Tuberculosis there is an increase in Resting Energy Expenditure (REE) due to increased metabolism, so the need for energy, protein and micronutrients will increase. Tempeh is made with soybeans contains macronutrients (carbohydrates, protein, fat, potassium, calcium, and phosphorus), micronutrients (Iron, Zinc, Sodium, and Water) and Isoflavone. One of the local foods rich in nutrients and widely available, and relatively cheap and easy to obtain is tempeh. Tempeh given by steaming is more effective than by frying. This is because the frying process can reduce the isoflavone content in tempeh.
Keywords: Tuberculosis, Steamed Tempeh, Brown Soy Milk.

Introduction

The trend of TB cases in Indonesia has never decreased, there are still many cases that have not been reached and detected [1]. Based on data from the World Health Organization (WHO), the number of new cases of tuberculosis (TB) in 2015 reached 10.4 million, an increase from the previous case which was 9.6 million. The largest number of TB cases was in India with 2.8 million cases, followed by Indonesia with 1.02 million cases and China with 918 thousand cases. Based on the WHO report in 2017, it is estimated that there were 1,200,000 cases in Indonesia, but only 420,000 cases have been reported to the Ministry of Health [1].

The governments of the National Targets of the National Medium-Term Development Plan (RPJMN) as stated in Presidential Regulation Number 59 of 2017 concerning the Sustainable Development Goals (SDGs), the government's efforts are that every patient suffering from TB must be found with a very intensive search and thanks to community support through the activities of the Health Cadres, including Door-to-door activity, in which the home visits of the Health Cadres are deployed to find suspected cases of TB and provide counseling about TB prevention and control. TB drugs are given for free, but must be taken regularly according to the rules to prevent being immune to TB drugs [1].

Family efforts play an important role, in addition to government efforts, because the patient's enthusiasm and adherence to taking medication are determined by family support. It is also necessary to determine the eating pattern and healthy living habits in the family. Socio-economic factors, nutritional status, age, gender, and low levels of education cause families to be unable to provide sufficient food and costs for health services [4]. In addition, efforts have been made to keep other family members away from patients with pulmonary TB when coughing, to avoid transmission through the patient's phlegm by opening the windows of the house, and drying the patient's mattress [2]. TB patients who are not treated immediately will cause further complications such as airway obstruction, cor pulmonale, lung carcinoma, and respiratory failure syndrome [3]. This requires the role of nurses to overcome this problem. As an educator, nurses help patients and families by increasing knowledge about the tuberculosis problem that is being experienced by patients. The nurse explains the meaning, causes, signs and symptoms, further consequences if TB is not treated, and a high-calorie and protein diet that is needed by the patient. The solution to the TB problem is done by applying PMT: Steamed Tempe and Chocolate Soy Milk to Tuberculosis clients with nutritional problems, because soybeans have a high vegetable protein content so they can improve the immune system, increase appetite, and increase nutritional status. The solution is to give one piece of 150g steamed tempeh, which is consumed 3 times a day, while brown soybeans are given 100g/day [5] found that providing steamed tempeh and chocolate soybean drink had an effect on weight gain. The application of providing steamed tempeh and chocolate soy drink to both clients was carried out for 11 visits.

Method

The application of providing steamed tempeh and chocolate soy drinks

The application of providing steamed tempeh and chocolate soy drinks was carried out on tuberculosis clients who experienced nutritional problems. They were given one piece of fresh tempeh weighing 150 g, steamed for 30 minutes accompanied by soybeans mixed with 100 grams cocoa daily. Both clients were also given informed consent before the implementation.

Subject

The participants in this case study consisted of two clients, who experienced nutritional problems. Both clients complained of no appetite, below normal weight, and chest pain. During the implementation, both of them were taking tuberculosis treatment. During the visit, the same treatment was given to clients, which is the application of providing steamed tempeh and chocolate soy drink. The application to both clients lasted for 11 visits each. No participants dropped out.

Research Design

The research design was descriptive research with a case study method using two tuberculosis subjects. The case study lasted for 11 days. Before the implementation, body weight and height were measured and specific complaints of tuberculosis were examined. Measurement of body weight to assess Body Mass Index (BMI), and evaluation of complaints is monitored every 2 days until day 11. In addition, during the implementation process, both subjects are reminded to always consume a balanced food so that the nutrients are fulfilled.

Results

Table 1. Demographic data, IMT, and complaints

S/N	Name	Age	Sex	Weight	Height	TB treatment stage	Complaints
1	Subject I	49yrs	F	42kg	160cm	Continued	Chest pain, cough with phlegm, no appetite
2	Subject II	37yrs	M	48kg (IMT :17)	168cm	Continued	Cough and chest pain, no appetite

Table 2. Monitoring Nutrition for Body Weight

S/N	Name	Visits (days)	Before giving treatment	After giving treatment
1	Subject I	I	42 kg	42.08 kg
	Subject II		48 kg	48.108 kg
2	Subject I	II	42.08 kg	42.106 kg
	Subject II		48.108kg	48.306 Kg
3	Subject I Mrs. P	III	42.106 kg	42.204 Kg
	Subject II Mr. D		48.306 Kg	48.504 kg
4	Subject I Mrs. P	IV	42.204 Kg	42.302 kg
	Subject II Mr. D		48.504 kg	48.702 kg
5	Subject I Mrs. P	V	42.302 kg	42.4 kg
	Subject II Mr. D		48.702 kg	48.9 kg
6	Subject I Mrs. P	VI	42.4 kg	42.408 kg
	Subject II Mr. D		48.9 kg	48.909 kg
7	Subject I Mrs. P	VII	42.408 kg	42.506 kg
	Subject II Mr. D		48.909 kg	49.108 kg
8	Subject I Mrs. P	VIII	42.506 kg	42.604 kg
	Subject II Mr. D		49.108 kg	49.305 kg
9	Subject I Mrs. P	IX	42.604 kg	42.702 kg
	Subject II Mr. D		49.305 kg	49.701 kg
10	Subject I Mrs. P	X	42.702 kg	42.8 kg
	Subject II Mr. D		49.701 kg	49.8 kg
11	Subject I Mrs. P	XI	42.8 kg	42.804 kg
	Subject II Mr. D		49.8 kg	49.809 kg

Discussion

The combination of providing steamed tempeh and chocolate soy milk contains 523 kcal of high energy with a high protein content of 40.71 grams/100 grams which is useful for increasing calorie and protein intake of pulmonary TB patients. The type of protein given can improve the patient's immune system and appetite which at the same time improves their nutritional status. Calorie adequacy and composition of protein types can be fulfilled while providing an effect of increasing appetite, giving antioxidants in cocoa, and soybean mixed drinks.

The modification of this high protein and calorie diet was due to the fact that both subjects experienced a drastic weight loss resulting in loss of appetite due to increased phlegm production and decreased body strength. Patients with pulmonary TB require more calories because they spend more energy in breathing [6]. Appropriate antioxidant supplementation is needed by patients with pulmonary TB for protection against free radicals. The flavonoid content in 100 gram chocolate soybean drink is 22 mg. The mechanism of isoflavones is as an antioxidant and increases the immune system.

In Subjects I and II, the body weight examination was carried out. On the first day of the implementation, Subject I weighed 42 kg and after the application of Steamed Tempe and Chocolate Soy Milk, the final result was 42.804 kg. While in Subject II, the initial weight was 48 kg and after the application, the final result was 49.809 kg. The difference in weight gain in each subject occurred due to the supporting factors of each family and the difference in the food portion of each subject.

Subject I lacked family support because she only lived with 1 child which was classified as less caring, while subject II received full support from his family, especially his wife who prepared the additional food needed. In [5] study, the increase in body weight, upper arm circumference and BMI in subject for 30 days.

Conclusion

Additional food of steamed tempeh and brown soy milk aims to increase appetite and gain weight as well as accelerate the healing of pulmonary TB. Tempeh is made with soybeans contains macronutrients (carbohydrates, protein, fat, potassium, calcium, and phosphorus), micronutrients (Iron, Zinc, Sodium, and Water)**.** The final result of monitoring the addition of steamed tempeh and chocolate soy milk during 11 home visits was that there was an increase in body weight in subject I from 42 kg to 42.804 kg. Meanwhile, in subject II there was a significant increase in body weight for the application of the addition of steamed tempeh and chocolate soy milk from 48 kg to 49.809 kg. The final result found was the effect of the application of PMT: steamed tempeh and chocolate soy milk aimed at increasing appetite. Supporting factors in the application of supplementary food high in calories and protein are the existence of good teamwork between very cooperative families.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Ministry of Health. Profil Kesehatan Indonesia 2018. Jakarta: Kementerian kesehatan;2018.
2. Jaji. Upaya Keluarga Dalam Pencegahan Penularan Tuberkulosis (TB) Paru ke Anggota keluarga Lainya diWilayah Kerja Pukesmas Sidorejo Pagalaram Tahun;2010.
3. Ardiansyah. Medikal Bedah Untuk Mahasisawa. Jogjakarta: Diva Press;2012.
4. Naga SS.Buku Panduan Lengkap Ilmu Penyakit Dalam. Jogjakarta: DIVA Press;2012.
5. Mellyana, Nurpudji. Pemanfaatan Minuman dari Cokelat Kedelai sebagai Minuman Kesehatan. Laporan Penelitian Hibah Kompentensi Tahun Anggaran 2009. Universitas Hasanuddin, Makassar;2010.
6. Setiawan, Suprapti ED. Pengaruh Terapi Standar dan Nurtrisi Tambahan Terhadap Fungsi Fisik dan Antropometri Penderita Tuberkulosis Paru. Surabaya;2014.

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