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THE EFFECT OF GIVING SNAKEHEAD FISH SUPPLEMENTATION THERAPY (*STRIATED CHANNA*) ON BODY WEIGHT IN TUBERCULOSIS PATIENTS AT THE SIDOTOPO HEALTH CENTER IN SURABAYA

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Abstrak

Tuberkulosis adalah penyakit menular disebabkan oleh bakteri Mycobacterium tuberculosis. Penelitian ini bertujuan untuk mengetahui pengaruh terhadap pemberian suplementasi ikan gabus (Channa striata) terhadap berat badan di Puskesmas Sidotopo. Metode yang digunakan pada penelitian ini yaitu one group pretest - posttest design yang melibatkan 20 pasien dengan menggunakan teknik purposive sampling. Kriteria inklusi penelitian yaitu klien yang baru diagnosis tuberkulosis aktif,minum OAT secara teratur, Usia 18-60 tahun. Kriteria eksklusi yaitu pasien TB yang menolak penelitian, TB MDR (Multi Drug Resistance), perokok, riwayat alergi, mengkonsumsi suplementasi lain. Penelitian ini dilakukan pada bulan juni 2022 di Puskesmas Sidotopo Surabaya. Analisis Laboratorium dilakukan di Lembaga Penyakit Tropis, Universitas Airlangga. Hasil uji statistik pada penelitian ini yaitu ada perbedaan pemberian ikan gabus (Channa striata) terhadap berat badan pada pasien tuberkulosis dengan nilai p-value = 0,000 (<0,005). Pretest yaitu mencapai 46.2 kg, sedangkan pada berat badan post test yaitu 48.2 kg. Hal tersebut menunjukan bahwa terjadi peningkatan berat badan pada pasien TB di Puskesmas Sidotopo Surabaya.

***Kata Kunci** : Berat Badan, Tuberkulosis, Ikan Gabus*

Abstract

Tuberculosis is an infectious disease caused by the bacterium Mycobacterium tuberculosis. This study aims to determine the effect of supplementing snakehead fish (Channa striata) on body weight at the Sidotopo Health Center. The method used in this study was a one group pre test post test design involving 20 patients using a purposive sampling. The study inclusion criteria were clients who had just been diagnosed with active tuberculosis, took OAT regularly, aged 18-60 years. Exclusion criteria were TB patients who refused the study, MDR (Multi drug Resistance) TB, smokers, had a history of allergies, took other supplements. This research was conducted in June 2022 at the Sidotopo Health Center in Surabaya. Laboratory analysis was carried out at the Tropical Disease Institute, Airlangga University. The results of statistical tests in this study were that there were differences in the administration of snakehead fish (Channa striata) on body weight in tuberculosis patients with a p-value = 0.000 (<0.005). The pretest reached 46.25 kg, while the post test body weight was 48.20 kg. This shows that there is an increase in body weight in TB patients at the Sidotopo Health Center in Surabaya.

Keywords : Weight, Tuberculosis, Snakehead fish

1. PENDAHULUAN

Tuberculosis is an infectious disease

caused by bacteria *Mycobacterium tuberculosis* (Mtb). Tuberculosis reaches 10 million people with 1.2 human deaths. In Indonesia, TB cases have reached 845,000 people with 98,000 human deaths. 283,000 tuberculosis patients who do not take treatment resulting in transmission (WHO, 2020). The respiratory tract is the gateway for pathogens*Mycobacterium tuberculosis*. Respiratory tract as a respiratory tract, starting at the nostrils to the alveoli.*Mycobacterium tuberculosis* is the causative agent of TB, then spreads through the air (coughing) so that it is inhaled by humans. Mtb as a contagious pathogen and infects the respiratory tract. The respiratory tract mucosa serves as an induction site where the initial mucosal immune response then continues as the host's first line of defense in defending pathogens (Williams, A., et al. 2012).

Malnutrition is a condition that occurs in Mtb patients. The condition of malnutrition reflects a decrease in body weight and serum albumin in TB patients. Mtb infection will produce the formation of cytokines to fight infection, thus inducing the formation of cytokines*down regulation* on albumin synthesis. Mtb infection increases the need for energy to maintain body functions so that it is characterized by rest*resting energy expenditure* (REE). The increase reaches 0-30% of energy requirements in normal people. This process can cause symptoms of anorexia caused by leptin production resulting in malabsorption and decreased intake. TB patients experience increased lipolysis and proteolysis so that malnutrition can occur (Protomo, 2012).

Fish cork (*Striated channa*) is one of the types of fresh fish found in rivers in public waters in Indonesia. Snakehead fish from the Channa genus which has 4 species, namely Snakehead Fish (*Striated channa*), false fish (*Channa gachua*), western Channa. Snakehead fish has protein with a protein content of 25.5% compared to other fish, besides that the albumin content is 6.22%, the mineral zinc is 1.74 mg/100 gr (Fitriyanti E and Meidy I.D., 2013). Fish cork (*Channa Striata*) is an alternative source of high-rate albumin. Cork fish has a high protein content compared to other fish, besides

The albumin content in snakehead fish has better degenerative properties than vegetable protein sources because it does not contain fiber (Gilda, 2014). According to research (Bintang, F. S., et al) showed that tuberculosis patients who had completed OAT treatment experienced an increase in body weight. OAT treatment improves the state of infection in the body, thereby increasing the intake and use of nutrients in the body (Sabiti, F. B., et al., 2021). Research related to the administration of snakehead fish albumin extract (*Striated channa*) is needed to determine differences in body weight in tuberculosis patients at the Sidotopo Health Center in Surabaya. This research is expected to be a reference for health workers at the Sidotopo Health Center in Surabaya, and health students in an effort to increase the provision of snakehead fish supplementation (*Striated channa*) in tuberculosis patients.

2. RESEARCH METHOD

This research design uses*one group pretest-posttest design*, namely experimental research conducted using only one group without a control group. Research object retrieval technique namely*purposive sampling*. technique*purposive sampling* namely the sampling technique on data sources with certain considerations.

The inclusion criteria were diagnosed with active tuberculosis or intensive treatment period, taking OAT regularly, age 18-60 years. The study exclusion criteria were TB patients who refused the study, MDR TB (*Multi Drug Resistance*), Patients who died due to other reasons that could not continue the study, smokers, history of allergies, consumption of supplements and other drugs at the time

of the study.

Research tools and materials, namely weight scales, height measurements, preparation of snakehead fish albumin extract (*Chana stirata*) obtained from purchasing 500 mg capsules that have received permission from BPOM. Snakehead fish albumin extract capsules are given in the form of 500 mg capsules at a dose of 1500 mg/day. The daily dose is divided into 3 parts, namely morning, afternoon and evening with a dose of 1500 mg (in 3 times giving @ 500 mg). The location of the study was to collect specimens at the Sidotopo Health Center in Surabaya. Laboratory Analysis at TBC, Institute of Tropical Diseases, Airlangga University. Time Research conducted in June 2022.

Data analysis on the results of this study used paired test statistical analysis*t-test.* If in the data normality test it is found that the distribution of the data is not normal, then the Wilcoxon test is carried out.

3. HASIL

Characteristics based on gender showed that the percentage of female patients (60%) was more than male (40%), besides that, the type of work that was most common in the self-employed reached 70% and housewives reached 30%. while for the most age tuberculosis sufferers are in the range of 18-34 (45%). At the last level of education, SD had the highest position in TB patients (45%), compared to SMP (30%) and SMA (25%). Based on BMI (*Body Mass Index*) in TB patients in the normal category, namely 11 or 55% and the Underweight category, reaching 9 or 45%. The data was obtained based on the screening that was carried out during the study.

Table 1.

SD	7.74	7.661	
	Pretest	Posttest	Posttest-prestest
X-	46.2+	48.2+	1.95 + 1.503

Based on table 1, it shows that the distribution of respondents at the Sidotopo Health Center in Surabaya based on pretest and posttest body weight in TB patients, the pretest reached 46.2 kg, while the post test weight was 48.2 kg. This shows that there is an increase in body weight in TB patients at the Sidotopo Health Center in Surabaya. Value diagram in tuberculosis patients as follows:

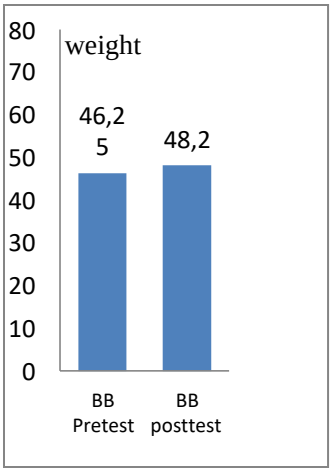

Figure 1. Pretest and posttest diagram of body weight in tuberculosis patients at the Sidotopo Health Center in Surabaya.

Results of the Kolmogorov-Smirnov normality test for body weight in tuberculosis patients at the Sidotopo Health Center (p> 0.05)

Tabel 2. Result Normality Test

Group	*P-value*	Explanation
Pretest	0.170	Tidak berdistribusi Normal
Posttest	0.018	Berdistribusi Normal

Based on table 2, it shows that the pretest group has a significance value of p-value > 0.05, while the posttest group has a significance value of p-value <0.05. This shows that the data is not normally distributed and normal. The pretest and posttest groups with abnormal data distribution results used the Wilcoxon test

Table 3. Analysis of the effect of giving snakehead fish therapy (*Striated channa*) on body weight in patients tuberculosis at the Sidotopo Health Center in Surabaya

Variable	*P-value*
Weight	0.000

Based on table 3, it shows that the results of the Wilcoxon test are p-value = 0.000 (<0.005), meaning that there is a difference in giving snakehead fish (*channa striata*) on body weight in tuberculosis patients.

4. DISCUSSION

The results of statistical analysis in this study showed that there were differences in the administration of snakehead fish therapy (*Striated channa*) on body weight at the Sidotopo Health Center in Surabaya. The mean value of this study in tuberculosis patients showed that from a value of 46.2 kg it increased to 48.2. This means that tuberculosis patients experience a very significant increase in body weight.

The results of this study are in accordance with the statement which explains that in tuberculosis patients there is an increase in body weight. Tuberculosis patients with changes in body weight during OAT treatment are parameters that indicate that the patient is in a condition leading to recovery and completion of OAT treatment. This affects changes in status in tuberculosis patients with a marked increase in body weight (Sabiti, F. B., et al., 2021).

Experts found by identifying approximately 17 amino acids found in snakehead fish (*Channa Striata*). The identified amino acids were glutamic acid, leucine, glutamate, aspartic acid, proline, alanine and arginine. Amino acids in*Channa Striated*is an amino acid needed to regulate the formation of the immune system. The presence of glycine in chana striata is an important component of human collagen and synergistically with other amino acids such as proline, alanine, arginine, isoleucine, phenylalanine and serine can form polypeptides that can promote tissue repair and wound healing (Gilda, 2014).

Another study stated that tuberculosis patients at the Seginim Health Center, South Bengkulu Regency experienced an increase in body weight at the end of treatment with 80 respondents, weight gain reaching 86.3%. Tuberculosis patients who gain weight have a better probability of success in OAT. In addition, the risk of recurrence is low (Tama T, 2016).

Malnutrition is a risk factor for the development of tuberculosis. Weight loss is the main feature in tuberculosis patients compared to normal nutritional status. Malnutrition causes reduced T-cell proliferation and impaired cellular immune system, in addition to susceptibility to infection. Low body mass index has less subcutaneous fat, reduced skeletal muscle mass, which causes an increased risk of TB compared to normal nutritional status. Weight loss is the main feature in TB patients (Chandra R., 1983).

In the results of this study, looking at the BMI values in patients showed that the average patient had tuberculosis*underweight* reached 45% while normal 55%. These problems in tuberculosis patients need to be considered in the nutritional status of tuberculosis patients. Another study stated that TB patients in Los Angeles Country experienced weight loss from 44.5% to 40.6% and experienced anorexia. (Linden S.K., 2008).

TB causes a decrease in BMI, namely the loss of free fat mass and fat

mass (Lillehoj E. R., 2002). Recovery and weight gain during TB treatment are used as markers of treatment response. Weight change over time is a predictor of successful treatment outcome. (Sato S., and Kiyono H., 2012). According to Bernede Ortiz found that tuberculosis patients experienced a linear increase in body weight over the entire treatment period 19. (Weiss G and Schailble, 2015).

5. CONCLUSIONS AND SUGGESTIONS

There are differences in the administration of snakehead fish therapy (*Striated channa*) to increase in body weight from 46.25 kg to 48.20 kg. This means that tuberculosis patients experience a very significant increase in body weight. The use of snakehead fish supplementation (*Striated channa*) can be considered as supplementation in tuberculosis patients in intensive phase therapy with the aim of helping improve the patient's condition in increasing body weight

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