

ABSTRACT

The Effect of High Protein Supplementation on Changes in Energy and Protein Intake, Muscle Mass, and Handgrip Strength in Cancer Patients Undergoing Chemotherapy at Dr. Sardjito General Hospital, Yogyakarta

Background: *Malnutrition in cancer patients can be caused by decreased food intake, metabolic disorders, inflammation, and the effects of chemotherapy. High-protein supplements, according to the European Society for Clinical Nutrition and Metabolism (ESPEN) in the form of enteral nutrition, can potentially prevent malnutrition in cancer patients undergoing chemotherapy. The effects of chemotherapy cause a decrease in food intake which results in a worsening of the patient's nutritional status. A decrease in muscle mass and function is one indication of malnutrition in cancer patients.*

Objective: *This study aims to analyze the effect of high-protein supplements on changes in nutritional intake and body composition of cancer patients receiving chemotherapy at Dr. Sardjito General Hospital Yogyakarta.*

Methods: *This study was an unblinded randomized control trial (RCT) with a pre and post-test design with a control group design. The population is cancer patients with chemotherapy at Dr. Sardjito General Hospital Yogyakarta. A simple random sampling technique determined the high supplement treatment group and the control group with commercial enteral supplements for at least three days. Muscle mass and grip strength were measured using a Bioelectrical Impedance Analysis (BIA) and hand grip dynamometer.*

Results: *There were differences in the average energy and protein intake in both the intervention and control groups ($p < 0.001$). The energy and protein intake increase in the intervention group was higher than in the control group, with p -values of 0.035 and 0.003, respectively. However, there was no difference in average muscle mass and hand grip strength before and after high protein supplementation ($p > 0.05$).*

Conclusion: *High-protein supplements can increase energy and protein intake compared to commercial enteral supplements in cancer patients undergoing chemotherapy. Although supplementation has not been able to increase muscle mass and function significantly, it has the potential to maintain muscle mass to prevent malnutrition.*

Keywords: *Energy intake, protein intake, hand grip strength, muscle mass, high protein supplement.*

INTISARI

Efek Pemberian Suplemen Tinggi Protein terhadap Perubahan Asupan Energi, Asupan Protein, Massa Otot, dan Kekuatan Genggam Tangan Pada Pasien Kanker dengan Kemoterapi di RSUP Dr. Sardjito Yogyakarta

Latar Belakang: Malnutrisi pada pasien kanker dapat disebabkan oleh asupan makan menurun, gangguan metabolisme, adanya inflamasi, dan efek kemoterapi. Suplemen tinggi protein menurut *European Society for Clinical Nutrition and Metabolism* (ESPEN) berupa nutrisi enteral berpotensi mencegah malnutrisi pada pasien kanker dengan kemoterapi. Efek kemoterapi dapat menyebabkan penurunan asupan makan yang mengakibatkan memburuknya status gizi pasien. Penurunan massa otot dan fungsinya dapat menjadi salah satu indikasi munculnya malnutrisi pada pasien kanker.

Tujuan: Penelitian ini bertujuan untuk menganalisis efek pemberian suplemen tinggi protein terhadap perubahan asupan gizi dan komposisi tubuh pasien kanker dengan kemoterapi di RSUP Dr. Sardjito Yogyakarta

Metode: Penelitian ini merupakan *unblinded randomized control trial* (RCT) dengan rancangan *pre dan post test with control group design*. Populasi nya adalah pasien kanker dengan kemoterapi di RSUP Dr. Sardjito Yogyakarta. Teknik *simple random sampling* digunakan untuk menentukan kelompok perlakuan suplemen tinggi dan kontrol dengan suplemen enteral komersial setidaknya selama tiga hari. Pengukuran massa otot dan kekuatan genggam diukur menggunakan alat *Bioelectrical Impedance Analysis* (BIA) dan *hand grip dynamometer*.

Hasil: Terdapat perbedaan rata-rata asupan energi dan protein baik pada kelompok intervensi maupun kelompok kontrol ($p < 0,001$). Peningkatan asupan energi dan protein pada kelompok intervensi lebih tinggi dibandingkan kelompok kontrol dengan *p-value* berturut-turut 0,035 dan 0,003. Meskipun demikian, tidak terdapat perbedaan rata-rata massa otot dan kekuatan genggam tangan sebelum dan sesudah pemberian suplemen tinggi protein ($p > 0,05$).

Kesimpulan: Suplemen tinggi protein dapat meningkatkan asupan energi dan protein pasien kanker dengan kemoterapi lebih tinggi jika dibandingkan dengan suplemen enteral komersial. Meskipun pemberian suplemen tinggi protein belum mampu meningkatkan massa otot dan fungsinya secara signifikan, suplementasi berpotensi mempertahankan massa otot pasien sehingga dapat mencegah terjadinya malnutrisi.

Kata kunci: asupan energi, asupan protein, kekuatan genggam tangan, massa otot, suplemen tinggi protein.

