

Normalized Goal program to determine a hemo-dialysis patients' nutrition

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Abstract

Hemo-dialysis (HD) diet is routinely decided by dietitians in hospitals. Such decisions are always crucial since they must satisfy the needs of HD patients from essential nutrients for patients in dangerous health state. The dietitians usually give health recommendations and suggest an approximate diet to be followed. In this work, a normalized Goal Programming (GP) model is developed to help the dietitians and the HD patients choose an optimal meal with the exact quantities of constituents from a set of meals. The process simultaneously takes into account the nutrients' requirements in planning the patient's daily diet. Specifically, this model aims to select the most appropriate dishes per day: a breakfast, a first snack, a lunch, a second snack and a dinner. Each of these five meals is chosen from a set of Tunisian recipes through the optimization of the goal program. A recipe of a dish is made up of ingredients used in the Tunisian diet according to the Tunisian Institute of Nutrition and extracted from their official database. The menu as a whole has to satisfy caloric and nutritional requirements for each of the main nutrients of the HD patients.

Keywords

Hemo-dialysis, Goal programming, Normalized Goal program, nutrition