

Universiti Teknologi MARA

**MATHEMATICAL MODELING OF DIET
PLANNING PROBLEM FOR
HYPERTENSION PATIENTS**

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the disciplines.



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ABSTRACT

Hypertension or high blood pressure is a global public health issue. It can cause other diseases to occur, such as cardiovascular disease, stroke, diabetes, and others. The nutritional problem of patients with hypertension has long been an issue in the area of operational science. Past and current studies also suggested that diet plays a significant role in influencing hypertension treatment. A healthy diet can provide vital foods for patients with elevated blood pressure that help to stabilise and lower their blood pressure. The purpose of this study was to formulate a mathematical model of diet planning for hypertension patients. Specifically, this study attempted to determine the amount of nutrients needed by hypertension patients, to find the cost of the food combination, and to identify the best model between linear programming and integer programming. The research model included 10 types of food groups with 200 variables based on Malaysian recipes and developed two programming techniques: linear programming and integer programming. The finding showed that the solution provided by the entire programming method have met the constraints and requirements of the food group. The integer programming approach would offer optimal and efficient alternatives to diet planning for patients with hypertension.

Keywords: Linear Programming, Integer Programming, Diet Planning, Optimization, Mathematical Model, Hypertension, High Blood Pressure

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