



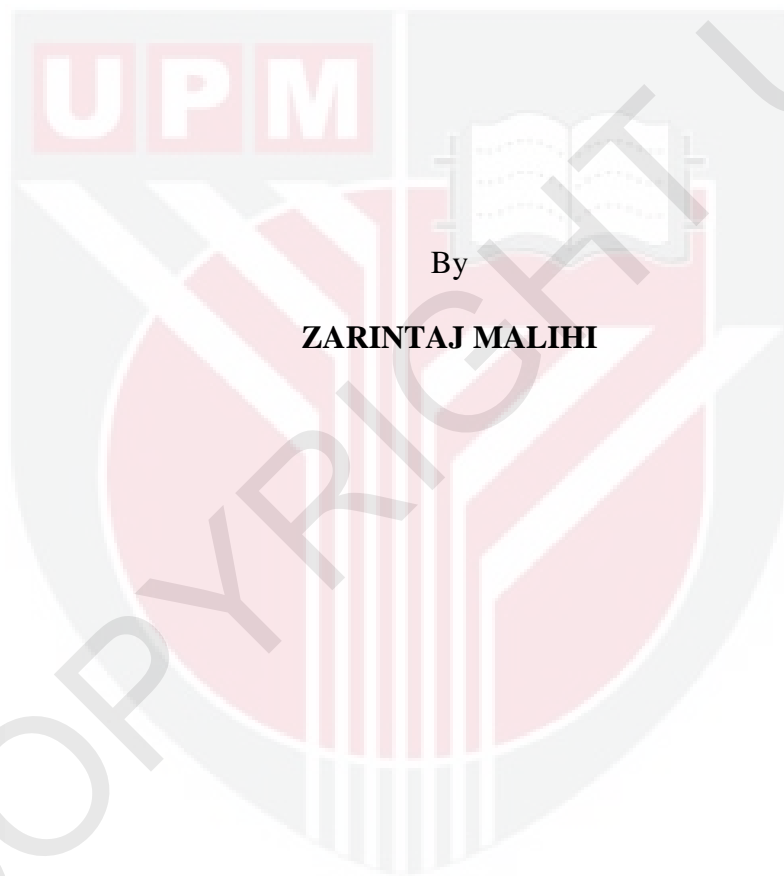
UNIVERSITI PUTRA MALAYSIA

**NUTRITIONAL STATUS, DIET AND QUALITY OF LIFE OF ACUTE
LEUKEMIA PATIENTS AFTER INDUCTION CHEMOTHERAPY IN THREE
SELECTED HOSPITALS IN TEHRAN, IRAN**

ZARINTAJ MALIHI

FPSK(m) 2012 4

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LEUKEMIA PATIENTS AFTER INDUCTION CHEMOTHERAPY IN
THREE SELECTED HOSPITALS IN TEHRAN, IRAN**



By

ZARINTAJ MALIHI

**Thesis submitted to the school of Graduates Studies, Universiti Putra
Malaysia, in the fulfillment of the requirements for the Degree of Master
Science**

February 2012

DEDICATION

I would like to dedicate this thesis to

My beloved parents, dear Mina and Morteza; my supportive and kind brothers, Omid and Iman and my sincere sister- in-law, Saeedeh and also my lovely life partner, Ali Javan

For their precious support and encouragement from the beginning of my study

Abstract of thesis presented to Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master

NUTRITIONAL STATUS, DIET, AND QUALITY OF LIFE OF ACUTE LEUKEMIA PATIENTS AFTER INDUCTION CHEMOTHERAPY IN THREE SELECTED HOSPITALS IN TEHRAN, IRAN

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February 2012

Chair: Mirnalini Kandiah, PhD

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Cancer is rated the 3rd most common cause of death in Iran. Adult leukemia which is a type of cancer in which the bone marrow generates abnormal myeloblasts or lymphoblasts, was ranked the 5th most common type of cancer in Iran in 2005. Chemotherapy is the primary treatment choice for leukemia before deciding for bone transplantation. This study aimed to determine the nutritional status, dietary intake and quality of life (QOL) of adults with Acute Myeloid Leukemia (AML) and Acute Lymphoblastic Leukemia (ALL) during the first stage of chemotherapy also known as induction chemotherapy. To have a clearer understanding of change in nutritional status and Quality Of Life (QOL), patients were assessed twice i.e. before and after the induction stage of chemotherapy. This is a prospective study with pre and post measures on adult leukemia patients which has been rarely reported in the literature.

The study subjects were newly diagnosed adult leukemia patients admitted to three main referral hospitals of Tehran, Iran. The Patient Generated Subjective Global Assessment (PG-SGA) used to evaluate nutritional status. Dietary intake was determined using a 136-item validated Food Frequency Questionnaire (FFQ) based on Iranian foods and two days 24-hour diet recall. The European Organization for Research and Treatment on Cancer (EORTC) QOL-C30 version 3 was used to assess four domains of quality of life (Functional scales, symptom scales, single items and global QOL) of patients. A structured questionnaire was used to obtain information on Sociodemographic characteristics and clinical characteristics of the patients. Data collection was done from June 2009 to March 2010. Primary analysis of dietary intake was conducted with Nutritionist IV dietary data analyzer software. Statistical analysis was conducted using SPSS package version 17. Hypotheses were examined using multiple linear regression analysis.

Sixty three acute leukemia patients consisting of 30 AML and 33 ALL patients, including 41 men (65.1%) and 22 (34.9%) women were recruited during data collection. Mean age of AML and ALL patients were 40 and 26 years old, respectively. Mean weight of patients before and after first induction was 66 kg and 62kg respectively and mean weight loss was 3.36 ± 0.7 kg. A significant change in nutritional status of the patients as well as significant difference in dietary intake indices and quality of life score after chemotherapy was found. Malnutrition increased considerably after chemotherapy from 19.4% to 76.1% moderately malnourished and from 0% to 6.3% of patients who were severely malnourished.

The change in nutritional status was not significantly related to change in global quality of life after chemotherapy, although before chemotherapy there was a significant linear relationship ($F= 20.55$, $R^2=0.263$, $P<0.001$), indicating that 26.3% of variation in quality of life can be explained by nutritional status. A significant relationship between changes in both total energy intake and food variety score (FVS) of patients and nutritional status was found ($F=6.67$, $R=0.427$, $R^2 =0.182$) which explained 18.2% of variation in nutritional status change.

It can be concluded that malnutrition occurs significantly in AML and ALL patients during induction chemotherapy and influences the quality of life during induction of chemotherapy which may inversely affect remission rate and treatment outcome. Dietary intake changed after chemotherapy significantly and was linearly correlated with nutritional status of patients. This may be explained by the adverse influence of chemotherapy drugs' side effects on dietary intake as observed in the high prevalence of nutrition impact symptoms including vomiting, nausea and loss of appetite during chemotherapy.

A routine nutritional assessment during induction chemotherapy is recommended based on the results of this study. Further research should be done on the most effective intervention for these patients to improve their nutritional status and prevent deterioration in quality of life and further failure in treatment outcome.

Abstrak ini dibentangkan kepada Senat Universiti Putra Malaysia bagi memenuhi salah satu syarat untuk bergraduat Ijazah Master Sains

**STATUS TARAF PEMAKANAN, DIET DAN KUALITI KEHIDUPAN
PESAKIT LEUKEMIA AKUT SELEPAS RAWATAN KEMOTERAPI
INDUKSI DI TIGA BUAH HOSPITAL TERPILIH DI TEHRAN, IRAN**

Oleh

ZARINTAJ MALIHI

Februari 2012

Pengerusi: Mirnalini Kandiah, PhD

Fakulti: Perubatan & Sains Kesihatan

Kanser didapati merupakan punca utama yang ketiga bagi kematian di Iran. Leukemia dikalangan dewasa iaitu kanser yang disebabkan oleh sumsum tulang yang menghasilkan *myeloblasts* atau *lymphoblasts* yang tidak normal, telah disenaraikan sebagai jenis kanser yang ke-5 paling lazim di Iran pada tahun 2005. Kemoterapi yang merupakan pilihan rawatan utama untuk leukemia sebelum melakukan pemindahan tulang. Kajian ini bertujuan untuk menentukan status pemakanan, pengambilan pemakanan dan kualiti hidup (QOL) dikalangan dewasa yang menghadapi *Acute Myeloid Leukemia* (AML), dan *Leukemia Acute Lymphoblastic* (ALL) ketika kemoterapi peringkat pertama yang juga dikenali sebagai induksi kemoterapi. Untuk pemahaman yang lebih jelas terhadap perubahan dalam status pemakanan dan kualiti hidup (QOL), pesakit telah dinilai sebanyak dua kali iaitu sebelum dan selepas induksi kemoterapi peringkat pertama. Ini

adalah kajian prospektif yang meliputi penilaian sebelum dan selepas untuk pesakit leukemia yang jarang dilaporkan dalam sejarah perubatan.

Subjek kajian adalah semua pesakit leukemia baru yang dimasukkan ke tiga hospital utama di Tehran, Iran. *The Patient Generated Global Assessment* (PG-SGA) digunakan untuk menilai taraf pemakanan. Pengambilan pemakanan ditentukan dengan *Food Frequency Questionnaire* (FFQ) yang mempunyai 136 jenis makanan Iran dan berdasarkan pengambilan makanan dua hari lepas (*24 hour diet recall*). Organisasi Eropah untuk Penyelidikan dan Rawatan Kanser (EORTC) QOL-C30 versi 3 telah digunakan untuk menilai empat domen kualiti hidup (*Functional scales, symptom scales, single items* dan global QOL) pesakit. Borang soal selidik berstruktur telah digunakan untuk mendapatkan maklumat mengenai sosio demografik dan ciri-ciri klinikal pesakit. Pengumpulan data telah dilakukan dari bulan Jun 2009 hingga Mac 2010. Analisis awalan pengambilan makanan telah dijalankan dengan menggunakan perisian data analisis Nutritionist IV. Analisis statistik dilakukan dengan menggunakan SPSS versi 17. Hipotesis diuji dengan menggunakan analisis regresi linear pelbagai.

Enam puluh tiga pesakit leukemia akut yang terdiri daripada 30 pesakit AML dan 33 pesakit ALL, dirangkumi oleh 41 lelaki (65.1%) dan 22 (34.9%) wanita semasa pengumpulan data. Min umur pesakit AML dan ALL adalah 40 tahun dan 26 tahun. Min berat badan sebelum dan selepas rawatan pertama ialah 66kg dan 62kg, dan min penurunan berat badan adalah 3.36 ± 0.7 kg. Didapati terdapat perubahan yang signifikan dalam tahap pemakanan dan perbezaan yang signifikan dalam index

pengambilan pemakanan dan skor kualiti hidup selepas kemoerapi. Kekurangan zat makanan meningkat dengan ketara selepas rawatan kemoterapi dari 19.4% kepada 76.1% bagi pesakit yang kekurangan zat makanan pada tahap sederhana dan dari 0% hingga 6.3% bagi pesakit yang kekurangan zat makanan yang teruk. Perubahan dalam status pemakanan tidak menunjukkan perhubungan yang signifikan dengan perubahan dalam kualiti hidup global selepas kemoterapi, walaupun sebelum kemoterapi, terdapat hubungan linear yang signifikan ($F = 20.55$, $R^2 = 0.263$, $P < 0.001$), menunjukkan bahawa 26.3% variasi dalam kualiti hidup dapat dijelaskan oleh status pemakanan. Perkaitan yang signifikan di antara perubahan dalam kedua-dua jumlah pengambilan tenaga and skor kepelbagaian makanan (FVS) pesakit dan taraf pemakanan ditemui ($F = 6.67$, $R = 0.427$, $R^2 = 0.182$) dimana menjelaskan variasi 18.2% dalam perubahan status pemakanan.

Ini boleh disimpulkan bahawa kekurangan zat makanan lebih ketara diantara pesakit AML dan ALL semasa induksi kemoterapi dan mempengaruhi kualiti hidup pesakit ketika induksi kemoterapi dimana mempengaruhi kadar remitan dan hasil rawatan. Perubahan dalam pengambilan makanan selepas kemoterapi berkaitan secara signifikan dan linear dengan status pemakanan pesakit. Ini boleh dijelaskan dengan pengaruh kesan sampingan ubat-ubatan kemoterapi terhadap pengambilan pemakanan seperti mana yang didapati di simptom impak pemakanan yang berpevalen tinggi termasuk muntah, loya dan kehilangan selera makan ketika kemoterapi.

Penilaian pemakanan yang rutin ketika induksi kemoterapi dicadangkan berdasarkan hasil kajian ini. Penyelidikan selanjutnya harus dilakukan, untuk mengenalpasti program intervensi yang paling sesuai untuk pesakit-pesakit ini untuk memperbaiki status pemakanan mereka dan mencegah kemerosotan kualiti hidup dan hasil rawatan.



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At the outset, I am thankful to the Almighty God who is the most beneficent and most merciful, for all his blessings, without which I wouldn't be able to achieve this feat.

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There are many more who deserve to be thanked whose names I may have forgotten to mention, but their priceless help, friendship and advice will always be appreciated.

I certify that a Thesis Examination Committee has met on the 24th February 2012 to conduct the final examination of Zarintaj Malihi on her thesis entitled **“NUTRITIONAL STATUS, DIET AND QUALITY OF LIFE OF ACUTE LEUKEMIA PATIENTS AFTER INDUCTION CHEMOTHERAPY IN THREE SELECTED HOSPITALS IN TEHRAN, IRAN”** in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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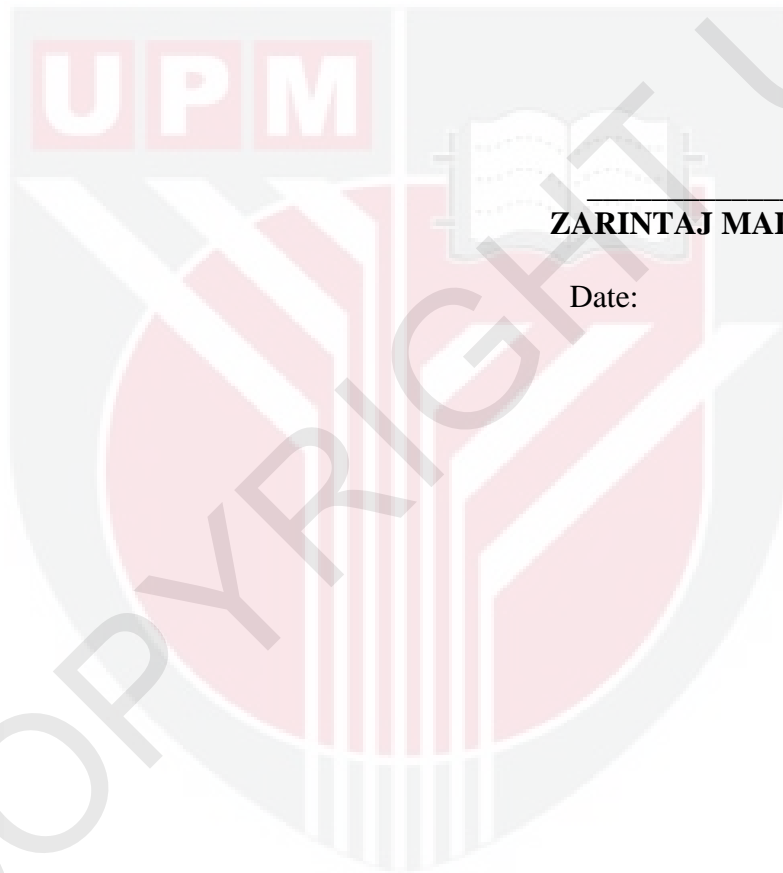
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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been dully acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institutions.



ZARINTAJ MALIHI

Date:

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