



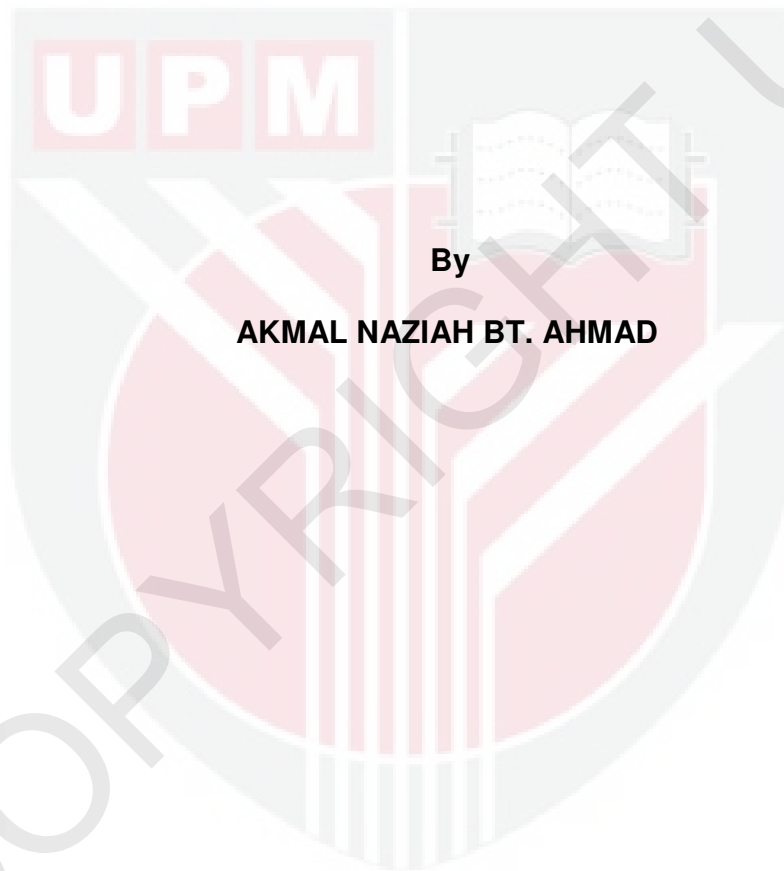
**UNIVERSITI PUTRA MALAYSIA**

**FACTORS INFLUENCING GLYCAEMIC CONTROL IN OLDER PEOPLE  
WITH TYPE 2 DIABETES MELLITUS ON ORAL HYPOGLYCAEMIC  
THERAPY AND ATTENDING A PRIMARY HEALTH CARE CENTRE  
IN NEGERI SEMBILAN, MALAYSIA**

**AKMAL NAZIAH BT. AHMAD**

**IG 2011 1**

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ATTENDING A PRIMARY HEALTH CARE CENTRE  
IN NEGERI SEMBILAN, MALAYSIA**



By

**AKMAL NAZIAH BT. AHMAD**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
Malaysia, in Fulfillment of the Requirement for the Degree of Master of  
Science.**

**May 2011**

DEDICATION

*To my dearest parents,*

*Hj. Ahmad Hj. Shafie and Hjh Adziah Dato' Hashim*

*For their true love, effort, guide and care since my childhood;*

*To my only sibling, Akmal Niza for her encouragement;*

*To my beloved husband, Mohammad Nazri*

*For all his understanding, patience and support during all the difficulties of my  
study*

*And;*

*To my dear children, Nasiruddin Hanif and Nuruddin Harith*

*For always giving me joy during the hardship and making everything possible.*

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

**FACTORS INFLUENCING GLYCAEMIC CONTROL IN OLDER PEOPLE WITH TYPE 2 DIABETES MELLITUS ON ORAL HYPOGLYCAEMIC THERAPY AND ATTENDING A PRIMARY HEALTH CARE CENTRE IN NEGERI SEMBILAN, MALAYSIA**

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May 2011

**Chairman: Associate Professor Zaitun Yassin, PhD**

**Faculty: Institute of Gerontology**

The number of Malaysian citizen living above 60 years is currently about 7% of the total population. The prevalence of diabetes in Malaysia has increased from 8.3% (1996) to 11% in 2006. Non-pharmacological factors were reported to play an important role in the progression of the disease. Factors like physical inactivity, dietary pattern and lifestyle practices such as alcohol consumptions and smoking habit among type 2 elderly diabetics were the variables that were studied in relation to glycaemic control. The aim of this research is to determine the prevalence of glycaemic control and factors associated with poor glycaemic control among elderly type 2 diabetic patients attending a primary health care in Negeri Sembilan.

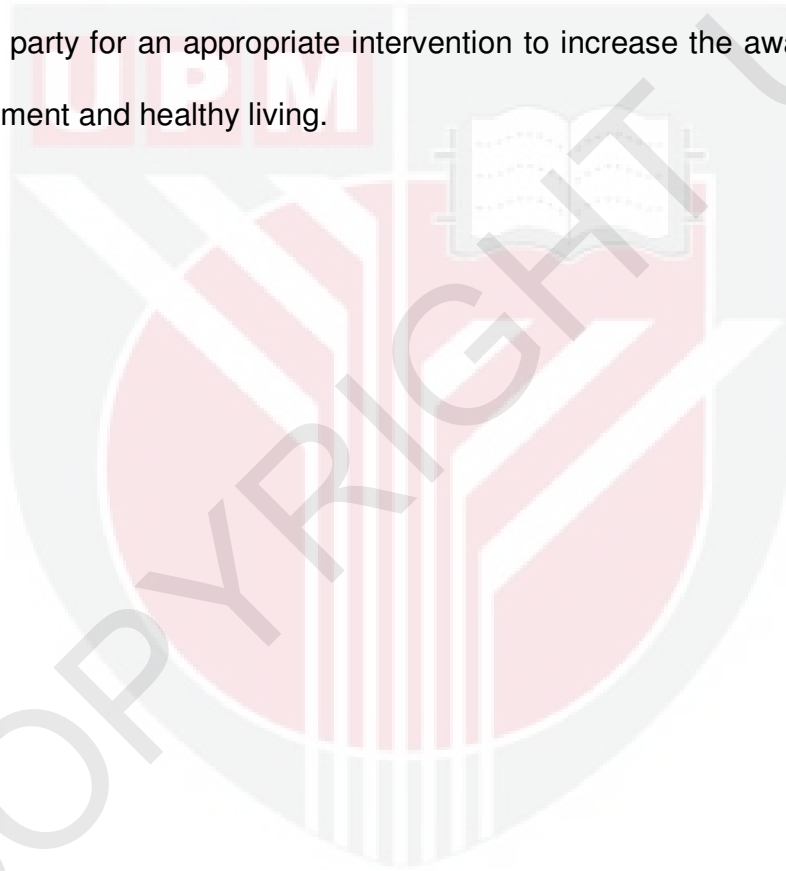
**Method:** A cross-sectional study was conducted in July to October 2009 at a Primary Health Clinic in Port Dickson, Negeri Sembilan. A structured and pre-

tested interviewer administered questionnaire was used for data collection. The respondents were type 2 diabetic patients 60 years and above of age. After screenings for inclusion and exclusion criteria, 230 respondents were selected in the study. Statistical Package for Social Science (SPSS) version 18 was used for data analysis.

**Results:** The response rate was 78%. The results showed that the mean age was  $68 \pm 6$  year and about 62% were less than 70 years. Majority of the respondents were female (56.5%), housewives (47.8%) and 60.4% have completed primary education. Sixty-one percent of the respondents had poor glycaemic control. A younger elderly ( $\chi^2=6.701$ ,  $p=0.010$ ), living arrangement ( $\chi^2=7.604$ ,  $p=0.006$ ), have non-home cook food ( $\chi^2=3.869$ ,  $p=0.049$ ) and have dinner without companion ( $\chi^2=7.642$ ,  $p=0.006$ ) show significant association. Additional to these, respondents on polytherapy ( $\chi^2=21.593$ ,  $p<0.001$ ), duration of diagnosis 5 to 10 years ( $\chi^2=5.958$ ,  $p=0.050$ ), age of first diagnosis less than 50 year ( $\chi^2= 12.113$ ,  $p=0.002$ ) and uncontrolled serum triglyceride (Fishers exact test  $p=0.049$ ) show significant association. Multiple logistic regression analysis resulted that Malay ethnicity (OR 2.5 95% CI 1.09-5.73), age of first diagnosis less than 50 year (OR 5.33 95% CI 1.27-22.33), age of first diagnosis 51-59 year (OR 4.07 95% CI 1.81-9.16), lunch without companion (OR 2.69 95% CI 1.25-5.82), daily lunch (OR 10.34 95% CI 2.02-53.9), polytherapy (OR 4.17 95% CI 1.95-8.90), difficulty in mobility (OR 2.12 95% CI 1.07-4.17) and amount of alcohol 2 glasses and more a week (OR 6.18 95% CI 1.84-20.77) were

significantly contribute to the risk of poor glycaemic control after adjusting for potential covariates.

**Conclusions:** Majority of the respondents had poor glycaemic control. Multiple lifestyle modifiable factors influenced the elderly type 2 diabetes. Therefore, there is a need to address these problems to the patients, their caregivers and the relevant party for an appropriate intervention to increase the awareness on self-management and healthy living.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**FAKTOR YANG MEMPENGARUHI KAWALAN GLYSEMİK DALAM  
KALANGAN WARGA EMAS BERPENYAKIT DIABETES MELLITUS JENIS 2  
YANG MENERIMA TERAPI ORAL HYPOGLYSEMİK DI KLINIK KESIHATAN  
DI NEGERI SEMBILAN, MALAYSIA**

Oleh

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**Mei 2011**

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Pada ketika ini, bilangan warganegara Malaysia yang telah mencapai umur 60 tahun dan ke atas adalah sebanyak 7 % dari keseluruhan populasi penduduk. Prevalens penyakit diabetes mellitus di Malaysia telah meningkat dari 8.3% (1996) kepada 11% dalam tahun 2006. Faktor rawatan bukan farmakologi dilaporkan memainkan peranan dalam perkembangan penyakit ini. Faktor seperti kurang aktiviti fizikal, corak pemakanan dan amalan gayahidup seperti pengambilan alkohol dan merokok dalam kalangan wargaemas berpenyakit diabetes mellitus jenis 2 adalah pembolehubah yang dikaji bagi faktor yang mempengaruhi perkaitan dengan kawalan glysemik . Tujuan kajian ini adalah mengenalpasti prevalens glysemik yang tidak terkawal dan faktor yang menyebabkan glysemik tidak terkawal dalam kalangan wargaemas berpenyakit

diabetes mellitus jenis 2 yang mendapatkan rawatan di klinik kesihatan di Negeri Sembilan.

**Metodologi:** Satu kajian keratan rentas telah dilakukan dalam bulan Julai hingga Oktober 2009 di Klinik Kesihatan Port Dickson, Negeri Sembilan. Kaedah pengumpulan data adalah dengan menggunakan borang soal selidik yang telah dibentuk dan diprauji. Responden merupakan pesakit yang berumur 60 tahun ke atas dan berpenyakit diabetes jenis 2. Setelah disaring mengikut kriteria penerimaan dan penolakan, 230 orang responden telah terpilih untuk dimasukkan ke dalam kajian ini. Analisis statistik (SPSS) versi 18 telah digunakan untuk menganalisa data yang diperolehi.

**Hasil Kajian:** Kadar respon kajian ini adalah 78%. Purata umur responden adalah  $68 \pm 6$  tahun dan seramai 62% responden berumur kurang dari 70 tahun. Kebanyakan responden adalah wanita (56.5%), surirumah (47.8%) dan 60.4% telah menamatkan pendidikan sehingga sekolah rendah. Enam puluh satu peratus dari responden mempunyai tahap glysemik yang tidak terkawal. Kumpulan yang berumur orang tua muda ( $\chi^2=6.701$ ,  $p=0.010$ ), susunan tempat tinggal ( $\chi^2=7.604$ ,  $p=0.006$ ), amalan mengambil makanan yang dibeli diluar rumah ( $\chi^2=3.869$ ,  $p=0.049$ ) dan makan bersendirian semasa makan malam ( $\chi^2=7.642$ ,  $p=0.006$ ) menunjukkan signifikan berkaitan dengan tahap glysaemik yang tidak terkawal. Tambahan lagi, responden yang menggunakan gabungan rawatan oral terapi ( $\chi^2=21.593$ ,  $p<0.001$ ), tempoh diagnos 5 hingga 10 tahun ( $\chi^2=5.958$ ,  $p=0.050$ ), umur pada diagnosis pertama kali kurang dari 50 tahun



( $\chi^2 = 12.113$ ,  $p = 0.002$ ) dan serum triglyserida yang tidak terkawal (Fishers exact test  $p = 0.049$ ) menunjukkan signifikan berkaitan dengan tahap glysaemik yang tidak terkawal. Ujian analisis pelbagai menggunakan regresi lojistik binary menunjukkan kaum Melayu (nisbah mungkin (OR 2.5 95% CI 1.09-5.73), umur pada diagnosis pertama kali kurang dari 50 tahun (nisbah mungkin OR 5.33 95% CI 1.27-22.33), umur pada diagnosis pertama kali antara 51-59 tahun (nisbah mungkin OR 4.07 95% CI 1.81-9.16), makan bersendirian semasa makan tengahari (nisbah mungkin OR 2.69 95% CI 1.25-5.82), makan tengahari setiap hari (nisbah mungkin OR 10.34 95% CI 2.02-53.9), gabungan rawatan oral terapi (nisbah mungkin OR 4.17 95% CI 1.95-8.90), menghadapi masalah pergerakan (nisbah mungkin OR 2.12 95% CI 1.07-4.17) dan amalan meminum alkohol sebanyak 2 gelas dan lebih dalam seminggu (nisbah mungkin OR 6.18 95% CI 1.84-20.77) mempunyai signifikan berkaitan risiko glysemik yang tidak terkawal, setelah mengambilkira kovariat yang berpotensi.

**Kesimpulan:** Majoriti responden mempunyai paras glysemik yang tidak terkawal. Beberapa faktor pembolehubah gaya hidup mempengaruhi warga emas berpenyakit diabetes jenis 2. Justeru itu, masalah ini perlu diambil perhatian oleh pesakit, penjaga dan pihak yang berkaitan bagi langkah pencegahan dan kesedaran penjagaan diri dan amalan hidup sihat.

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I certify that a Thesis Examination Committee has met on 18<sup>th</sup> May 2011 to conduct the final examination of Akmal Naziah bt. Ahmad on her thesis entitled “Factors Influencing Glycaemic Control In Older People with Type 2 Diabetes Mellitus on Oral Hypoglycaemic Therapy And Attending A Primary Health Care Centre in Negeri Sembilan, Malaysia” 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 Science in Gerontology.

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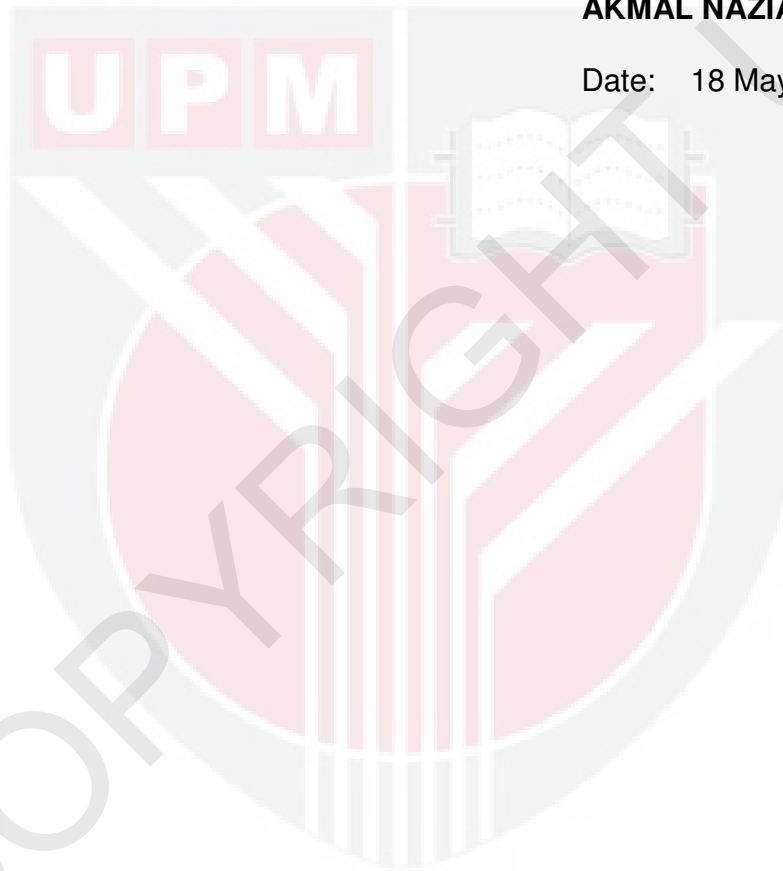
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## DECLARATION

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

**AKMAL NAZIAH BT AHMAD**

Date: 18 May 2011



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