



UNIVERSITI PUTRA MALAYSIA

**PREDICTORS OF POOR GLYCEMIC CONTROL AMONG DIABETIC
PATIENTS IN AL-MADINAH DIABETIC CENTRE, SAUDI ARABIA**

MANSOUR A. ALMUTAIRI

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2013

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By

MANSOUR A. ALMUTAIRI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
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Chairman: Salmiah Md. Said, M. Comm. Med.

Faculty: Medicine and Health Sciences

Poor glyceemic control is a major public health problem. In Saudi Arabia, the incidence of poor glyceemic control was high among patients with diabetes mellitus. Good glyceemic control is a major objective for the prevention or postponement of long-term complications from diabetes. Marker of diabetes control is the glycosylated hemoglobin A1c (HbA1c). The American Diabetes Association (ADA) has designated an HbA1c level of <7% as a goal for optimal blood glucose control.

A cross sectional study was conducted to determine the predictors of poor glyceemic control among ambulatory type 2 diabetes patients who were registered in the Al-Madinah Diabetic Centre, were at least 20 years of age, and had been diagnosed with diabetes for at least three months. A total of respondent were selected using systematic random sampling technique. The data were collected from 21st February 2010 to 21st

May 2010 using a self-administered, pre-tested questionnaire. The data on HbA_{1c} level were collected from the patients' files because all the diabetic patients must have their HbA_{1c} level checked at interval regular visit, every three or, 6 months or yearly.

Poor glyceemic control was defined as when HbA_{1c} value is 7% or more for the past three month.

The response rate was 92%. Among the respondents, the overall percentage of poor glyceemic control was 76%. The percentage of patients with poor glyceemic control was highest among males, aged 60 years and older, who have no formal education, no job, low income, a positive family history of diabetes and those with oral hypoglycemic agent and respondents with one or more complications. In addition, these patients were diagnosed at age 40 years and above and had diabetes for 7 years and longer, with low levels of physical activity, obesity, and abnormal caloric intake. The glyceemic control were significantly associated with family history of diabetes, duration of diabetes mellitus, type of diabetic management and number of diabetic complications $p < 0.05$).

However, in the logistic regression analysis, the predictors of poor glyceemic control were only positive family history of diabetes (OR=3.45, 95% CI: 1.29-9.18) and on oral hypoglycemic agents (OR=78.14, 95% CI= 8.88-687.69), and on insulin/combination treatment (OR=37.57, 95% CI: 4.07-346.55) than diet alone. This rather high proportion of poor glyceemic control implies the need for the Diabetic Centre to make an effort to develop continuing educational programs that emphasize lifestyle modification and the importance of adherence to a treatment regimen for glyceemic control among diabetic patients.

Keywords: Poor glyceemic control, Diabetes Mellitus, Obesity, Physical activities, Diabetic Centre.

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

RAMALAN KAWALAN GLISEMIK YANG KURANG BAIK DI KALANGAN PESAKIT DIABETIS DI PUSAT DIABETIS AL-MADINAH, ARAB SAUDI

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Pengawalan glisemik yang kurang baik adalah kepada salah satu punca utama masalah kesihatan masyarakat. Ini dapat dilihat terutama di Saudi Arabia. Menurut laporan, kawalan glisemik merupakan objektif utama bagi menghindari dan menanggukkan komplikasi penyakit diabetis jangka panjang. Penanda kawalan glisemik adalah Glycosylated Haemoglobin A1c (HbA1c). Pihak American Diabetics (ADA) telah menjadikan 7% tahap HbA1c sebagai matlamat kawalan optimum kandungan glukos dalam darah (American Diabetic Association, 2003). Sebuah kajian keratan rentas telah dijalankan untuk membuat ramalan kawalan glisemik yang kurang baik dalam kalangan pesakit Pusat Diabetic Al Madinah bagi mereka yang berusia 20 tahun dan ke atas, berupaya bergerak, dan tidak melebihi daripada tiga bulan proses diagnosis serta didaftarkan di pusat ini.

Teknik pensampelan rawak yang sistematik digunakan untuk memilih responden. Hasil kajian dikumpul dari 21 februari 2010 sehingga 21 mei 2010 melalui borang soal selidik urus sendiri yang telah diuji sebelumnya. Tahap HbA1c responden dikumpul daripada fail pesakit kerana setiap pesakit wajib mengambilnya ketika setiap lawatan berkala. Ketinggian responden diukur tanpa kasut menggunakan alat ukur tinggi badan dengan ketepatan 0.1 sentimeter (cm). Berat badan responden dengan pakaian ringan tanpa kasut diukur menggunakan alat timbang berat, dengan ketepatan 0.1 kilogram (kg). BMI mereka dikira menggunakan formula berat badan dibahagi oleh hasil darab dua kali ketinggian responden, dan/atau laporan sendiri melalui sosio-demografi, profil kesihatan, Aktiviti Soal Selidik Fizikal Antarabangsa serta teknik rekod ingatan diet 24 jam. Kadar tindak balas yang diperolehi adalah 92%. Berdasarkan jumlah tersebut, sebanyak 76% yang mempunyai kawalan glisemik yang kurang baik. Peratusan kawalan glisemik yang kurang baik paling tinggi adalah kalangan lelaki berumur 60 tahun dan ke atas, tiada pendidikan formal, tidak bekerja, berpendapatan rendah, mempunyai sejarah diabetes positif dalam keluarga, menjalani pengurusan Oral Combination (Oral & Diet), serta mempunyai satu atau lebih komplikasi. Begitu juga dengan responden berumur ke atas, jangka masa diabetes 7 tahun dan ke atas, kurang membuat aktiviti fizikal, mempunyai masalah obesiti, serta mengambil kandungan kalori yang banyak. Kawalan glisemik yang kurang baik dikaitkan rapat dengan sejarah keluarga, jangka masa penyakit diabetes mellitus, pengurusan diabetes, dan komplikasi diabetes ($p < 0.05$).

Walaupun, dalam analisis regresi logistik, ramalan kawalan glisemik yang kurang baik hanya sejarah keluarga positif diabetes (OR=3.45, 95% SK: 1.29-9.18), dan oral rawatan glisemik (OR=78.14, SK: 4.07-346.55), dan gabungan rawatan (OR=37.57, 95% SK: 4.07-346.55) daripada diet semata-mata.

Bahagian ini agak tinggi kerana kawalan glisemik yg kurang baik memerlukan Pusat Diabetes untuk membuat satu usaha menggabungkan program-program pendidikan berterusan daripada menentukan pengubahsuaian gaya hidup dan kepentingan atau pematuhan kepada regimen perubatan untuk kawalan glisemik dalam kalangan pesakit kencing manis.

Kata kunci: Kawalan glisemik yang kurang baik, Diabetes Melitus, Obesiti, Aktiviti fizikal, Pusat Diabetes.



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I certify that a Thesis Examination Committee has met on 18 July 2013 to conduct the final examination of Mansour Awad Almutairi on his thesis entitled "Predictors of poor glycemetic control among diabetic patients in Al-Madinah Diabetic Centre, Saudi Arabia" in accordance with the Universities and the University College 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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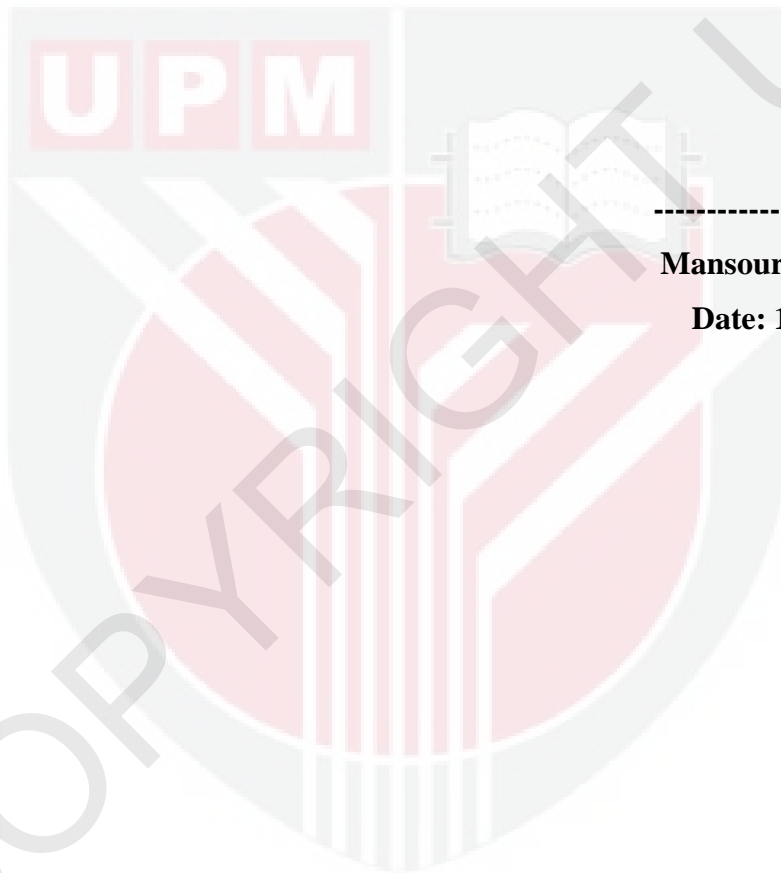
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DECLARATION

I hereby declare that the work in this thesis is my own 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 at any other institution.



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Date: 18 July 2013



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