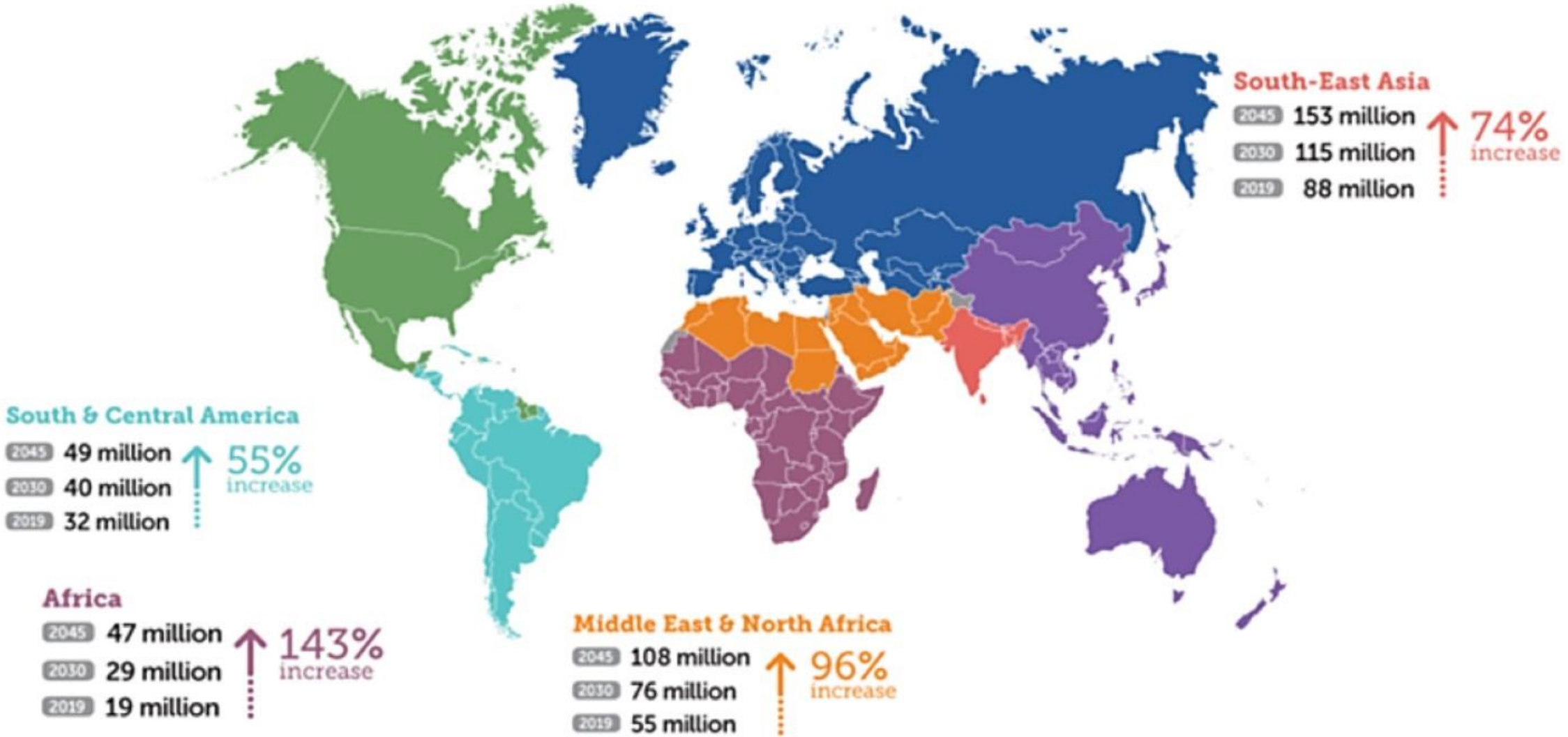
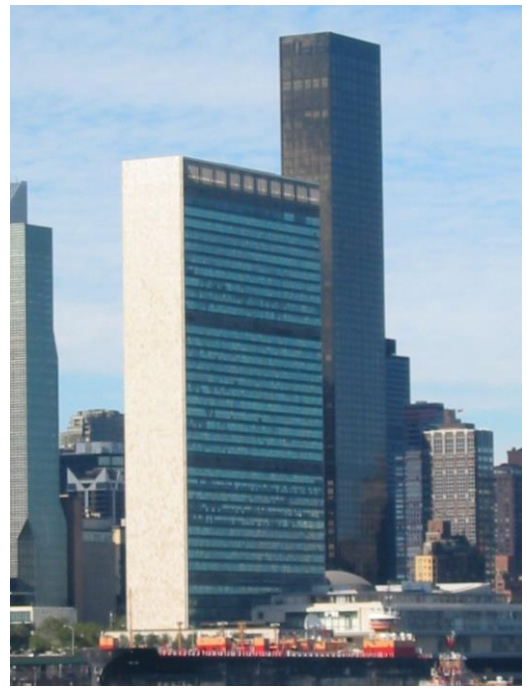
Clinical Questions from the Diabetes Clinic- Answers from Big Data

Increasing Prevalence of T2DM in Asia, Latin America, and Africa



International Diabetes Federation. Diabetes Atlas 2019.



5.59pm
Wednesday 20th
December 2006

192 Member States adopted
Resolution 61/225 by consensus

UK/LM/1109/0233

UN Resolution 61/225

The Resolution addresses all diabetes

Diabetes is a chronic, debilitating and costly disease associated with severe complications

Diabetes poses risks to families, Member States and the entire world

UN Resolution 61/225

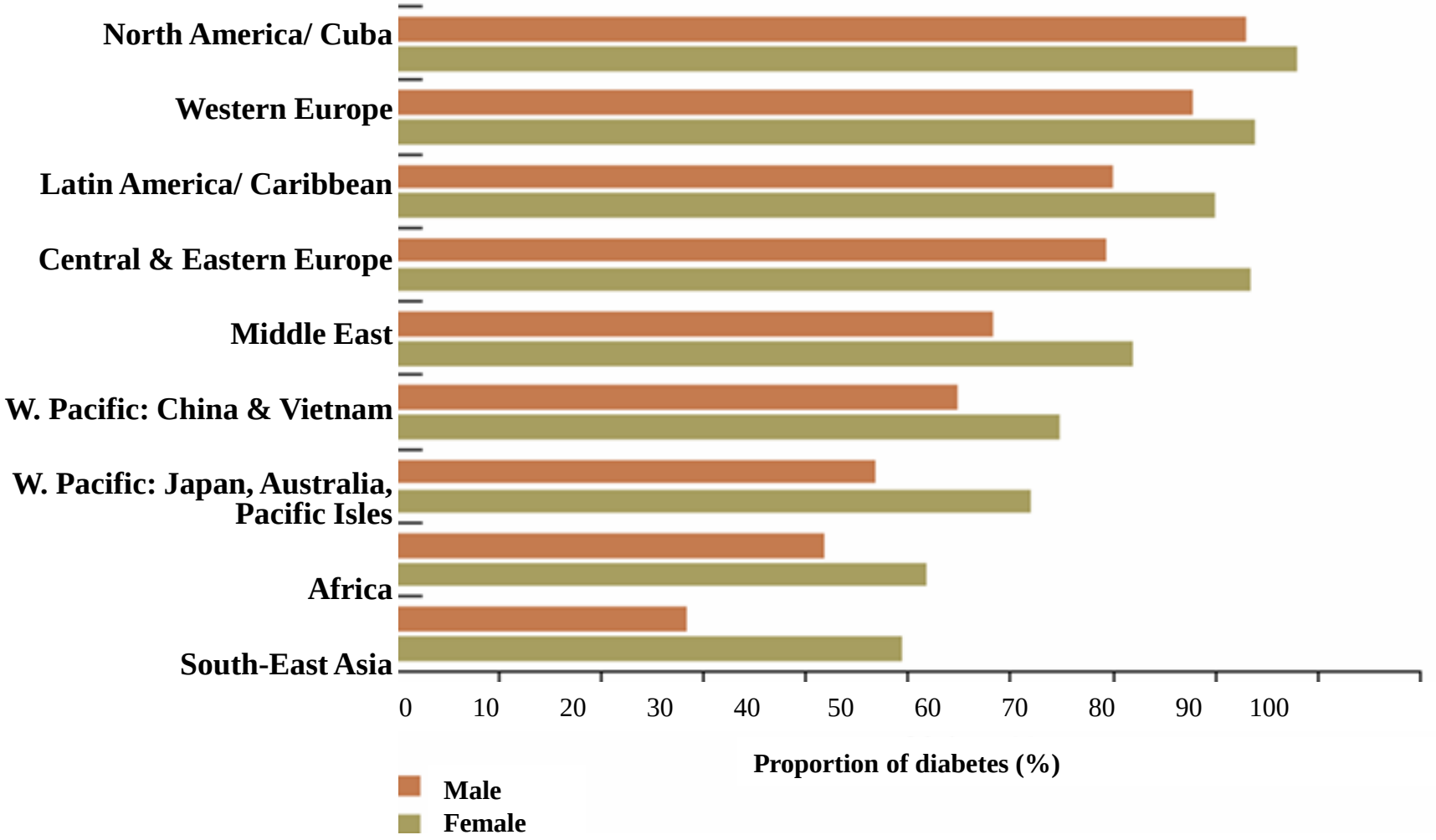
Diabetes poses challenges to agreed development goals, including MDGs

UN observed World Diabetes Day from 14 November 2007

National policies for prevention, care and treatment of diabetes in line with sustainable development of health-care systems

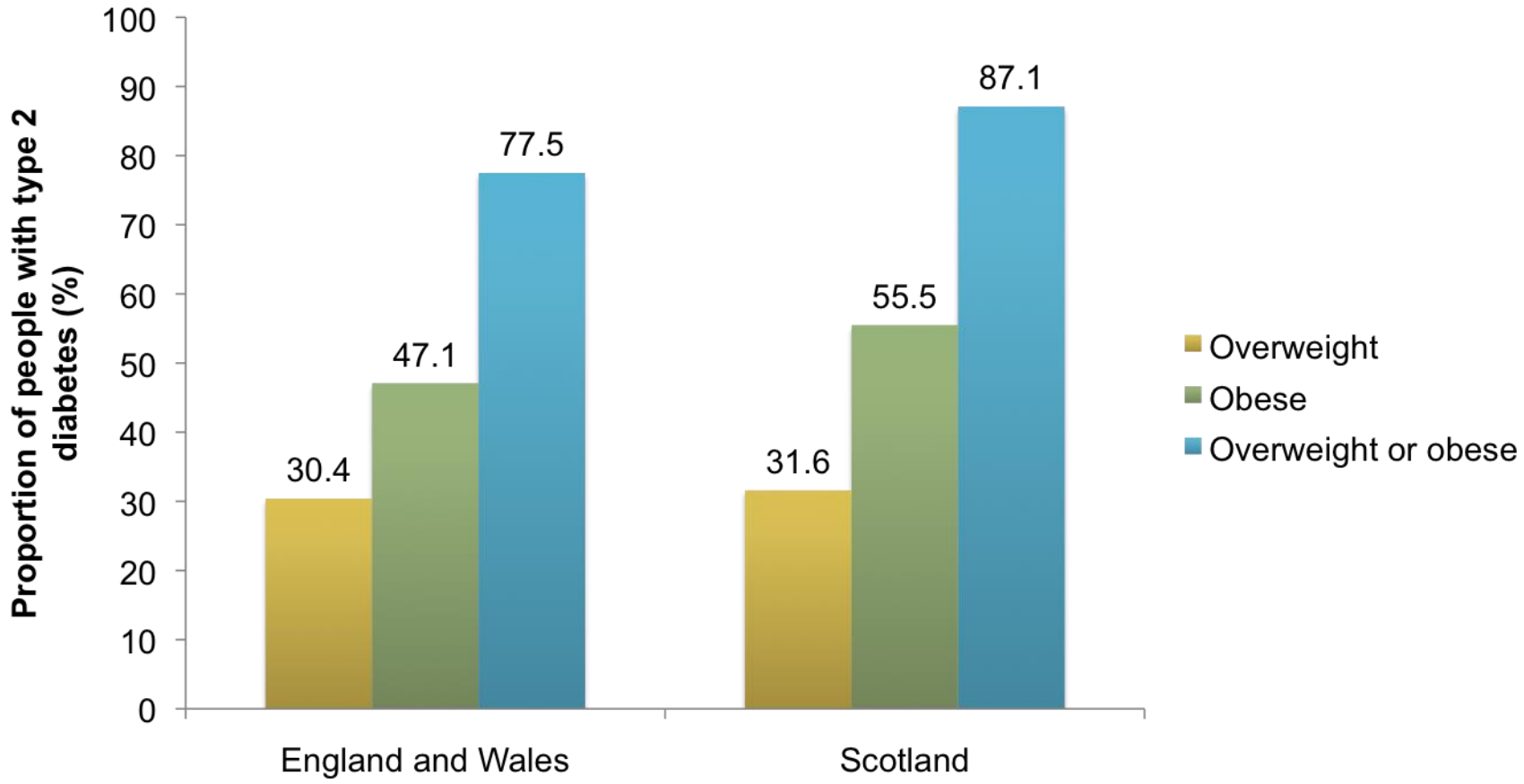
UK/LM/1109/0233

Diabetes attributable to weight gain (30+yrs)



International Diabetes Federation 2003;
International Obesity Task Force, 2003

Prevalence of overweight and obesity in people with type 2 diabetes in England, Wales and Scotland



Overweight refers to BMI 25–29.9 kg/m^2; obese refers to BMI ≥30 kg/m^2

1.Health and Social Care Information Centre (2013) *National Diabetes Audit 2011–2012. Report 1: Care Processes and Treatment Targets.* Available at: http://bit.ly/1bk2Glh (accessed 10.02.2014)

2.Scottish Diabetes Survey Monitoring Group (2012) *Scottish Diabetes Survey 2012.* Available at: http://bit.ly/1gdzGGV (accessed 12.03.2014)

DIABETICMedicine

DOI: 10.1111/dme.13968

Research: Epidemiology

Obstructive sleep apnoea in Type 2 diabetes mellitus: increased risk for overweight as well as obese people included in a national primary care database analysis

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Accepted 15 April 2019

Abstract

Aims To determine obstructive sleep apnoea prevalence in people with Type 2 or Type 1 diabetes in a national primary care setting, stratified by BMI category, and to explore the relationship between patient characteristics and obstructive sleep apnoea.

Methods Using the Royal College of General Practitioners Research and Surveillance Centre database, a cross-sectional analysis was conducted. Diabetes type was identified using a seven-step algorithm and was grouped by Type 2 diabetes, Type 1 diabetes and no diabetes. The clinical characteristics of these groups were analysed, BMI-stratified obstructive sleep apnoea prevalence rates were calculated, and a multilevel logistic regression analysis was completed on the Type 2 diabetes group.

Results Analysis of 1 275 461 adult records in the Royal College of General Practitioners Research and Surveillance Centre network showed that obstructive sleep apnoea was prevalent in 0.7%. In people with Type 2 diabetes, obstructive sleep apnoea prevalence increased with each increasing BMI category, from 0.5% in those of normal weight to 9.6% in those in the highest obesity class. By comparison, obstructive sleep apnoea prevalence rates for these BMI categories in Type 1 diabetes were 0.3% and 4.3%, and in those without diabetes 1.2% and 3.9%, respectively. Obstructive sleep apnoea was more prevalent in men than women in both diabetes types. When known risk factors were adjusted for, there were increased odds ratios for obstructive sleep apnoea in people with Type 2 diabetes in the overweight and higher BMI categories.

Conclusions Obstructive sleep apnoea was reported in people with both types of diabetes across the range of overweight categories and not simply in the highest obesity class.

Diabet. Med. 36, 1304–1311 (2019)

Table 2. BMI classifications of the adult general practice population with and without diabetes in the RGCP RSC data base

Characteristic	Type 2 DM *N = 84,394*	Type 1 DM *N = 5,443*	No diabetes *N = 1,179,730*
BMI category, n (%)			
Underweight	574 (0.7)	109 (2.0)	41,533 (3.5)
Normal	13,346 (15.8)	2,085 (38.3)	433,935 (36.8)
Overweight	28,275 (33.5)	1,877 (34.5)	328,947 (27.9)
Obesity class 1	22,780 (27.0)	866 (15.9)	134,809 (11.4)
Obesity class 2	11,089 (13.1)	266 (4.9)	44,908 (3.8)
Obesity class 3	7,162 (8.5)	117 (2.1)	22,919 (1.9)

Table 3. Prevalence of obstructive sleep apnoea (OSA) according to BMI category (a) and obesity class (b)

a) BMI category

	OSA, % (95% CI)		
	Type 2 DM *N = 84,394*	**Type 1 DM** *N = 5,443*	**No diabetes** *N = 1,179,730*
Underweight	0.2 (0.00–0.52)	0.0 (0.00–0.00)	0.1 (0.09–0.16)
Normal	0.5 (0.35–0.58)	0.3 (0.10–0.62)	0.1 (0.14–0.16)
Overweight	1.2 (1.08–1.33)	0.7 (0.37–1.17)	0.5 (0.47–0.51)
Obesity (all classes)	4.7 (4.48–4.89)	1.6 (0.96–2.32)	1.7 (1.62–1.73)

b) Obesity class

	OSA , % (95% CI)		
	Type 2 DM *N = 84,394*	**Type 1 DM** *N = 5,443*	**No diabetes** *N = 1,179,730*
1	2.8 (2.59–3.02)	1.4 (0.69–2.19)	1.2 (1.13–1.25)
2	5.3 (4.93–5.77)	1.1 (0.00–2.63)	2.0 (1.85–2.10)
3	9.6 (8.95–10.32)	4.3 (0.85–8.55)	3.9 (3.66–4.16)

BMI classifications: underweight <18.5 kg/m²; normal 18.5–24.9 kg/m²; overweight 25.0–29.9 kg/m²; Obesity classes: class 1 30.0–34.9 kg/m²; class 2 35.0–39.9 kg/m²; class 3 ≥40.0 kg/m².

BMI, body mass index; CI, confidence interval; DM, diabetes mellitus; OSA, obstructive sleep apnoea

PP929 Demographic and clinical factors for safer pregnancy in diabetes: trends over time in a national primary care study

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BACKGROUND

Pre-conception care for women with diabetes, aimed at optimization of metabolic control, review/withdrawal of specific medications and management of comorbidities, reduces pregnancy complications. However, only a minority of women with diabetes plan their pregnancy and most conceive with negative but modifiable factors.

AIMS

To describe the changes over 13 years of demographic, clinical characteristics, and specific medications in women of childbearing age with diabetes.

MATERIALS & METHODS

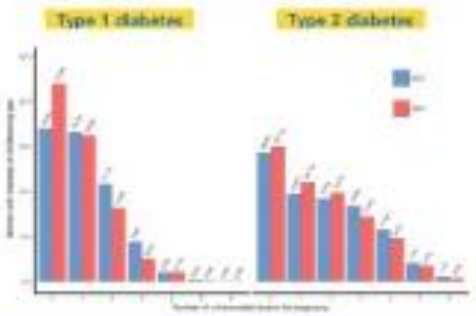
Women with diabetes, aged 16-45 years, were identified from the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) network. Repeated annual cross-sectional analyses were undertaken between 2004 and 2017 to determine glycaemic control, medications and other conditions.

Unfavourable factors for pregnancy:
- HbA1c ≥8.5% (69 mmol/mol);
- BMI > 30 kg/m²;
- Presence of microalbuminuria;
- Hypertension or SBP ≥ 140 mmHg or DBP ≥ 90 mmHg regardless of antihypertensive medication;
- Prescription of statins, ACE inhibitors or ARB;
- Prescription of at least one diabetes medication other than metformin and insulin (for type 2 diabetes patient only).

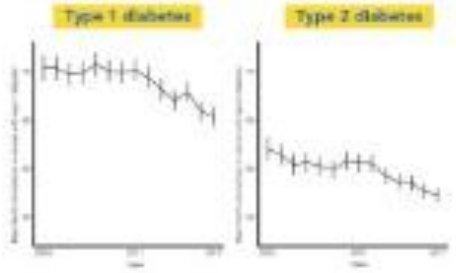
RESULTS

We identified 3,218 women (61.5% type 2 diabetes) in 2004 and 6,657 (65.0% type 2 diabetes) in 2017.

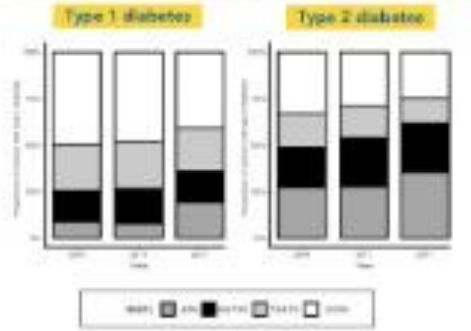
Cumulative score of factors considered to be unsafe in the case of pregnancy



Mean HbA1c of women of childbearing age with diabetes (2004-2017)



Proportion of woman of childbearing age by HbA1c category (2004-2017)



- The proportion of women with type 1 diabetes with BMI > 30 kg/m2 increased from 19.8% (95%CI: 17.0 – 22.6) to 26% (95%CI: 23.7 – 28.3), while it remained stable among those with type 2 diabetes [66.2% (95%CI: 63.6 – 68.8) to 68.1 (95%CI: 66.3 – 69.8)].
- Prescription of medications for therapy of type 2 diabetes other than insulin and metformin increased from 22.3% (95%CI: 20.5 – 24.2) to 27.3% (95%CI: 26.0 – 28.6).
- Prescription of ACE inhibitors, ARBs or statins decreased in type 1 diabetes from 21.3% (95%CI: 19.0 – 23.6) to 14% (95%CI: 12.6 – 15.4) and from 34.6% (95%CI: 31.5 – 36.7) to 30.7% (95%CI: 29.3 – 32.0) in type 2 diabetes.

CONCLUSIONS

Despite an overall improvement in glycaemic control, women with diabetes of childbearing age have more than one unfavourable factor/medication in the case of pregnancy. Enhanced educational interventions on pregnancy planning to both healthcare professionals and patients should be implemented to target treatable factors for safer pregnancies.

Acknowledgements
Erasmus+ Traineeship Grant

GLP-1 RA treatment: a benefit-risk analysis from a retrospective cohort study

UNIVERSITY OF SURREY

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[1]Department of Clinical and Experimental Medicine, University of Surrey, UK

RCGP Royal College of General Practitioners

Background

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are an established drug class of injectable non-insulin treatments for type 2 diabetes (T2D). Clinical trials have shown various benefits including reductions in HbA1c and weight, and low hypoglycaemia risk, whilst gastrointestinal side-effects have been identified as a predominant limiting factor of GLP-1 RAs.[1-3] However, it is unclear whether these findings are generalisable to real world clinical practice, and which patients are more or less likely to respond well to this treatment.

Aims

1) To determine the patients managed in a primary care setting most likely to benefit from GLP-1 RAs, and with the lowest risk of adverse effects.
2) To identify the proportion of people from a current national dataset who were ever prescribed a GLP-1 RA.

Methods

We performed a retrospective cohort analysis using a primary care based population (Royal College of General Practitioners Research and Surveillance Centre, N =1,595,445).[4]

We identified a cohort of people with T2D prescribed at least one GLP-1 RA therapy (Exenatide, Lixisenatide, Liraglutide, Albiglutide or Dulaglutide) up to 31st December 2016. Regression modelling was used to ascertain factors associated with:

1) Improvement in HbA1c;
2) weight reduction;
3) presence of gastrointestinal side-effects (nausea, vomiting, and diarrhoea); and
4) treatment discontinuations during the first year.

Adjustments were made for: gender, age, ethnicity, socioeconomic status (using the Index of Multiple Deprivation (IMD)), body mass index (BMI), duration of diabetes, and HbA1c at initiation.

Results

From 144,427 people with T2D, 3.8% (n = 5,514) were prescribed one or more GLP-1 RAs. Mean HbA1c at GLP-1 RA initiation was 76.05 mmol/mol (SD 16.66) (Table1) with mean HbA1c improvement -4.99 mmol/mol (SD 16.90) at 1 year. Mean BMI at initiation was 37.98 kg/m² (SD 7.03) with mean BMI improvement -1.19 (SD 5.18) at 1 year.

Improvement in HbA1c

After adjusting for baseline HbA1c, people 65+ years old had a greater reduction in HbA1c at 1 year, compared to those < 55 years (55-74 years: -2.63; 95% CI -4.25 to -1.02; 75+ years: -5.12; 95% CI -7.61 to -2.63). Females, compared to males, showed a greater HbA1c reduction (-1.89 mmol/mol; 95% CI -3.21 to -0.56). Other associations are shown in Figure 1. Socioeconomic status and BMI were not associated with glycaemic improvement.

Weight reduction

Weight reduction was greater in those with the highest initial BMI (-0.13 kg/m²; 95% CI -0.14 to -0.11). There were no other associations identified.

Side effects

Side effects were almost twice as frequently reported by females (OR 1.79; 95% CI 1.27 to 2.51). There were no other associations with reporting of adverse effects.

Discontinuation

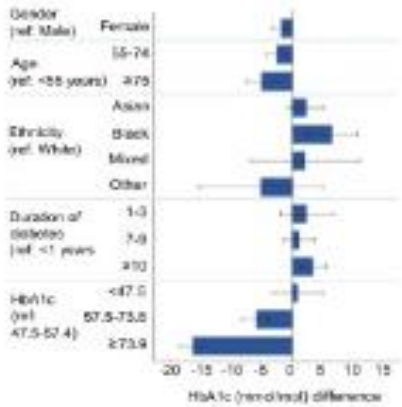
Treatment discontinuation was less common in those who had T2D for 1-3 years (OR 0.49; 95% CI 0.37 to 0.67) and more common in those diagnosed 10+ years ago (OR 1.73; 95% CI 1.45 to 2.06) compared to those with T2D for 4-9 years. Treatment discontinuation was also less likely in those with a high HbA1c at initiation (73.9+ mmol/mol) (OR 0.61; 95% CI 0.49 to 0.74) compared to those with a lower HbA1c (47.5-57.4 mmol/mol); and more likely for those with a BMI ≥ 40 kg/m² (OR 1.54; 95% CI 1.21 to 1.97) compared to those with BMI 25.0-29.9 kg/m².

Table 1. Baseline characteristics of people with T2D ever prescribed a GLP-1 RA (N = 5,514).

Characteristic	n (%) or mean ±
Male	2,936 (53.2)
Age at first GLP-1 RA	56.1 ±11.8
Ethnicity recorded	4,779 (86.7)
White	4,277 (77.6)
Asian	283 (5.3)
Black	146 (2.6)
Mixed	36 (0.7)
Other	35 (0.5)
IMD recorded	5,502 (99.8)
IMD quintile 5 (least deprived)	1,071 (19.4)
IMD quintile 4	1,126 (20.4)
IMD quintile 3	1,121 (20.3)
IMD quintile 2	1,028 (18.6)
IMD quintile 1 (most deprived)	1,156 (21.0)
BMI recorded	4,368 (79.2)
BMI at first GLP-1 RA	38.0 ±7.03
Duration of diabetes at first GLP-1 RA	9.1 ±6.1
HbA1c at first GLP-1 RA	76.1 ±16.9

GLP-1 RA: Glucagon like peptide-1 receptor agonist; IMD: Index of Multiple Deprivation; BMI: body mass index

Figure 1. Associations between clinical characteristics and HbA1c (mmol/mol) at 1 year after GLP-1 RA initiation.



Conclusions

Older people and those with diabetes of short duration achieve the greatest glycaemic benefit from GLP1 RAs. Females also have greater HbA1c reduction despite reporting more adverse effects. Weight loss appears to be consistent across all groups.

These findings will help develop a targeted approach to GLP-1 RA prescribing in individuals with T2D.

Key findings

- 3.8% of people with T2D were ever prescribed a GLP-1 RA
- Following initiation of GLP-1 RA, both HbA1c and BMI decreased at 1 year.
- Reductions in HbA1c at 1 year were greater in older people (≥65 years) and those with a shorter duration (<1 year) of T2D.
- Females were more likely to report adverse effects, but still achieved a lower HbA1c at 1 year after initiation.
- Discontinuation was less likely with higher HbA1c at initiation, but more likely with higher BMIs.

Acknowledgments

The authors would like to thank other contributors at the University of Surrey:
Filipa Ferreira (project manager)
Chris Mckee and Jeremy van Vlymen (researchers)

References

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Diabetes Ther (2018) 9:1397–1402
https://doi.org/10.1007/s13300-018-0390-8

STUDY PROTOCOL

Does Real World Use of Liraglutide Match its Use in the LEADER Cardiovascular Outcome Trial? Study Protocol

William Hinton · Michael Feher · Neil Munro · Simon de Lusignan

Received: January 31, 2018 / Published online: March 31, 2018

ABSTRACT

Background: Liraglutide is an injectable therapy to treat type 2 diabetes (T2DM), belonging to the glucagon-like peptide-1 receptor agonist class of drugs. The Liraglutide Effect and Action in Diabetes: Evaluation of Cardiovascular Outcome Results (LEADER) trial established that liraglutide demonstrated glucose-lowering benefits and improved cardiovascular outcomes in those individuals with T2DM at high cardiovascular risk.

Aims: The aim of this study is to report the prevalence and characteristics of people treated with liraglutide compared with the LEADER trial. In addition, the remaining portion of the T2DM population will be examined to determine the prevalence of those who meet the inclusion criteria for the LEADER trial but who are not treated with this medication.

Study Design and Methods: This is a cross-sectional analysis of routinely collected primary care data on all people with T2DM included in the Royal College of General Practitioners (RCGP) Research and Surveillance Center (R network database. People with T2DM will identified from the dataset using a well-est lished ontological process. Read and other cl cal codes will be used to identify pec prescribed liraglutide and those at high car vascular risk. We will use descriptive statistic report the characteristics of people with T2 prescribed liraglutide compared with those of LEADER trial and the proportion of the wi T2DM cohort that matches the LEADER in sion criteria. In terms of ethical considerati this study used pseudonymized data, and classed as an "Audit of current practice".

Planned Outputs: The results of the study be submitted for publication in a peer-revie journal to report the applicability of the res of the LEADER trial to real-world clin practice.

Funding: Novo Nordisk Limited.

Keywords: Cardiovascular diseases; Cr sectional studies; Diabetes mellitus, type Liraglutide; Medical record syste computerized

General Poster Session

Insulin Therapy in Type 3c Diabetes—More Common in Chronic Rather than Acute Pancreatitis

WILLIAM HINTON, MICHAEL FEHER, NEIL M. MUNRO, RACHEL M. COYLE and SIMON DE LUSIGNAN

Author Affiliations

Diabetes 2018 Jul; 67(Supplement 1): -.
https://doi.org/10.2337/db18-1047-P

Previous

Article Info & Metrics

Abstract

Background and Aims: Prevalence of diabetes following pancreatic disease (type 3c diabetes/T3cDM) is estimated to affect 5-10% of people with diabetes in Western populations. However, misclassification of T3cDM is common. Consequently, there is little real-world data on prescribing of antihyperglycaemic medications in people with T3cDM. The aim of this study is to evaluate prescribing of antihyperglycaemic medications in people with T3cDM.

DIABETICMedicine

DOI: 10.1111/dme.14290

Research: Treatment

Sodium–glucose co-transporter-2 inhibitor cardiovascular outcome trials and generalizability to English primary care

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Accepted 28 February 2020

Abstract

Aim To identify people in English primary care with equivalent cardiovascular risk to participants in the sodium–glucose co-transporter-2 inhibitor (SGLT-2i) cardiovascular outcome trials (CVOTs). A secondary objective was to report the usage of SGLT-2is.

Methods Cross-sectional analysis of people registered with participating practices in the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) network on the 31 December 2016. We derived: (1) proportions of the primary care population eligible for inclusion in each SGLT-2i CVOT (CANVAS, DECLARE, EMPA-REG and VERTIS); (2) characteristics of the eligible population compared with trial participants (demographics, disease duration and vascular risk); and (3) differences within the eligible population prescribed SGLT-2is.

Results The proportions of people with type 2 diabetes (N = 84 394) meeting the inclusion criteria for each CVOT were: DECLARE 27% [95% confidence interval (CI) 26.5–27.1]; CANVAS 17% (16.6–17.1); VERTIS 7% (7.1–7.4); and EMPA-REG 7% (6.5–6.8). Primary care populations fulfilling inclusion criteria were 5–8 years older than trial cohorts, and <10% with inclusion criteria of each trial were prescribed an SGLT-2i; a greater proportion were men, and of white ethnicity.

Conclusions There was variation in proportions of the primary care type 2 diabetes population fulfilling inclusion criteria of SGLT-2i CVOTs. The more stringent the inclusion criteria, the lower the proportion identified in a primary care setting. Prescription rates for SGLT-2is were low in this national database, and there were demographic disparities in prescribing.

Diabetes Ther (2020) 11:2169–2175
https://doi.org/10.1007/s13300-020-00878-y

STUDY PROTOCOL

Does Renal Function or Heart Failure Diagnosis Affect Primary Care Prescribing for Sodium-Glucose Co-Transporter 2 Inhibitors in Type 2 Diabetes?

William Hinton · Michael Feher · Neil Munro · Simon de Lusignan

Received: April 28, 2020 / Published online: July 15, 2020

ABSTRACT

Introduction: Sodium-glucose co-transporter 2 inhibitors (SGLT2is) are a unique class of drugs currently used in the management of type 2 diabetes (T2D). There are emerging data from cardiovascular outcome trials confirming renal and heart failure benefits of these drugs independent of glucose lowering. By contrast, the current licencing indications of these drugs are

Methods: We will perform a cross-sectional analysis of people with T2D in the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) network. The RCGP RSC includes more than 1500 volunteer practices throughout England and parts of Wales, and a representative sample of over 10 million patients. The proportion of adults with T2D ever prescribed an SGLT2i will be determined. Within this cohort, we will calculate the per-

Hypoglycaemia: Making sense of chaotic coding in primary care computerised medical records

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Background

Hypoglycaemia is one of the most important side-effects of insulins, sulphonylureas and meglitinides[1,2]. It presents a major barrier for people with diabetes to achieve glucose treatment targets, with the aim to prevent diabetes complications. Consistent recording of both asymptomatic and symptomatic hypoglycaemia is crucial for effective clinical management, education, and research.

Recently, the American Diabetes Association and the International Hypoglycaemic Study Group have published guidelines to standardise the recording of hypoglycaemia (Table 1)[3,4]. To the best of our knowledge, coding of hypoglycaemia in primary care has not previously been reviewed.

Aims

The aims of the study were to identify the individual codes for hypoglycaemia, and frequencies of use for recording any hypoglycaemia in the primary care setting.

Methods

We performed a retrospective cohort study using routinely collected primary care data from the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) database. The RCGP RSC is a nationally representative English primary care sentinel network[5], which comprised 349,883 people with diabetes (ever registered) at the time that data were extracted (31st December 2018), from a population of over four million people.

We identified each clinical code for hypoglycaemia using the standardised UK terminologies: Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT) and the Read classification. We then determined the frequency of use for each clinical code for any hypoglycaemia in the diabetes cohort, ranked their usage, and also evaluated the number of codes used for severe hypoglycaemia.

Results

From 40,185 individuals (comprising 11.5% of the total diabetes cohort) with at least one hypoglycaemia event, we ascertained that there were 96,533 separate recordings of a hypoglycaemic episode. The majority of these events occurred in people treated with either insulins, sulphonylureas or meglitinides (83.8%).

We identified 87 different clinical codes available to record descriptively the cases of hypoglycaemia. However, almost half (n = 41) of the descriptive codes were not used to record a hypoglycaemic event.

Three codes accounted for 77.4% of hypoglycaemia recordings ("Last hypoglycaemia attack" 39.7%; "Hypoglycaemia unspecified" 26.5%; "Frequency of hypoglycaemia attacks" 11.3%); while 43 separate codes were used to record 22.6% of hypoglycaemia events (Table 2).

Descriptors for "severe hypoglycaemia" were documented by 10 separate code terms, which comprised 7.7% (n = 7,418) of the hypoglycaemia recordings (Table 3).

Table 1. Recommended classification of hypoglycaemia[3,4]

Level	Glycaemic criteria description
Level 1	Glucose ≥54 mg/dL (3.0 mmol/L) and <70 mg/dL (3.9 mmol/L)
Level 2	Glucose <54 mg/dL (3.0 mmol/L)
Level 3	Severe hypoglycaemic event: altered mental and/or physical status requiring external assistance

Table 2. The ten most commonly used code terms to record hypoglycaemia (from total number of hypoglycaemic event recordings; N = 96,533)

Clinical code term	n (%)
Last hypoglycaemia attack	38,287 (39.7)
Hypoglycaemia unspecified	25,568 (26.5)
Frequency of hypoglycaemia attacks	10,887 (11.3)
Hypoglycaemic warning good	6,471 (6.7)
Frequency of hospital-treated hypoglycaemia	3,409 (3.5)
O/E-insulin and oral hypoglycaemic (antidiabetic) drugs causing adverse effects in therapeutic use	2,168 (2.2)
Frequency of GP or paramedic treated hypoglycaemia	1,947 (2.0)
Hypoglycaemia unspecified NOS	1,769 (1.8)
Reactive hypoglycaemia NOS	1,651 (1.7)
Hypoglycaemic coma	967 (1.0)
Other hypoglycaemia terms	3,462 (3.6)

Table 3. Code terms to record severe hypoglycaemia (N = 7,418)

Clinical code term	n (%)
Frequency of hospital-treated hypoglycaemia	3,409 (46.0)
Frequency of GP or paramedic treated hypoglycaemia	2,185 (29.5)
Hypoglycaemic coma	967 (13.0)
Hypoglycaemic attack requiring 3rd party assistance	602 (8.1)
Hypoglycaemic coma NOS	104 (1.4)
Type 1 diabetes mellitus with hypoglycaemic coma	62 (0.8)
Type 2 diabetes mellitus with hypoglycaemic coma	51 (0.7)
Hypoglycaemia-induced convulsion	23 (0.3)
Non-insulin dependent diabetes mellitus with hypoglycaemic coma	14 (0.2)
Insulin coma	1 (0.0)

Conclusions

Recent guidelines have been published both to standardise the recording of hypoglycaemia in clinical trials and to describe fewer categories for types of hypoglycaemia. In order to harmonise coding for hypoglycaemia in primary care, informatics maybe an important step with improved ontologies (different categories for treatments and conditions) to capture the different descriptors of hypoglycaemia.

Key findings

- 11.5% of people with diabetes had at least one recorded hypoglycaemic event.
- There was wide variation in hypoglycaemia codes used in this primary care national database.
- There were 87 separate clinical codes available to record hypoglycaemia, but only 46 were utilised.
- For severe hypoglycaemia, 10 different code terms were utilised.

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