Real world evidence on the disparities in prescribing of dipeptidyl peptidase-4 inhibitors in UK primary care

Andrew McGovern, William Hinton, Jeremy van Vlymen, Neil Munro, Martin Whyte, Simon de Lusignan

Department of Clinical and Experimental Medicine, University of Surrey, Guildford, UK

UNIVERSITY OF SURREY

Royal Surrey County Hospital NHS NHS Foundation Trust

cedar

Aim

Dipeptidyl peptidase-4 (DPP-4) inhibitors are recommended second or third line therapy in type 2 diabetes and have become widely prescribed in primary care. We present a description of their current use and prescribing trends in UK primary care. In particular we look at how socioeconomic status affects prescribing rates.

Background

Prescribing rates of medications for coronary heart disease have previously been demonstrated to be lower in people with lower socioeconomic status.[1] We hypothesised that similar trends may also occur in prescribing rates of DPP-4 inhibitors in people with type 2 diabetes.

Methods

A cohort of people with type 2 diabetes (N=34,278) was identified from the University of Surrey-Lilly Real World Evidence (RWE) centre database, using routinely collected primary care data. Monthly prescription data was extracted from primary care records on the use of DPP-4 inhibitors in this group. We report prescription numbers over time and the demographics of people prescribed these medications.

We compare the rates of DPP-4 inhibitor prescribing across differing levels of deprivation. We use the Index of Multiple Deprivation (IMD) as the measure of deprivation.[2] We calculated odds ratios (OR) of being prescribed a DPP-4 inhibitor by deprivation quintile, when adjusting for important confounders (gender, age, BMI, diabetes duration, and glycaemic control).
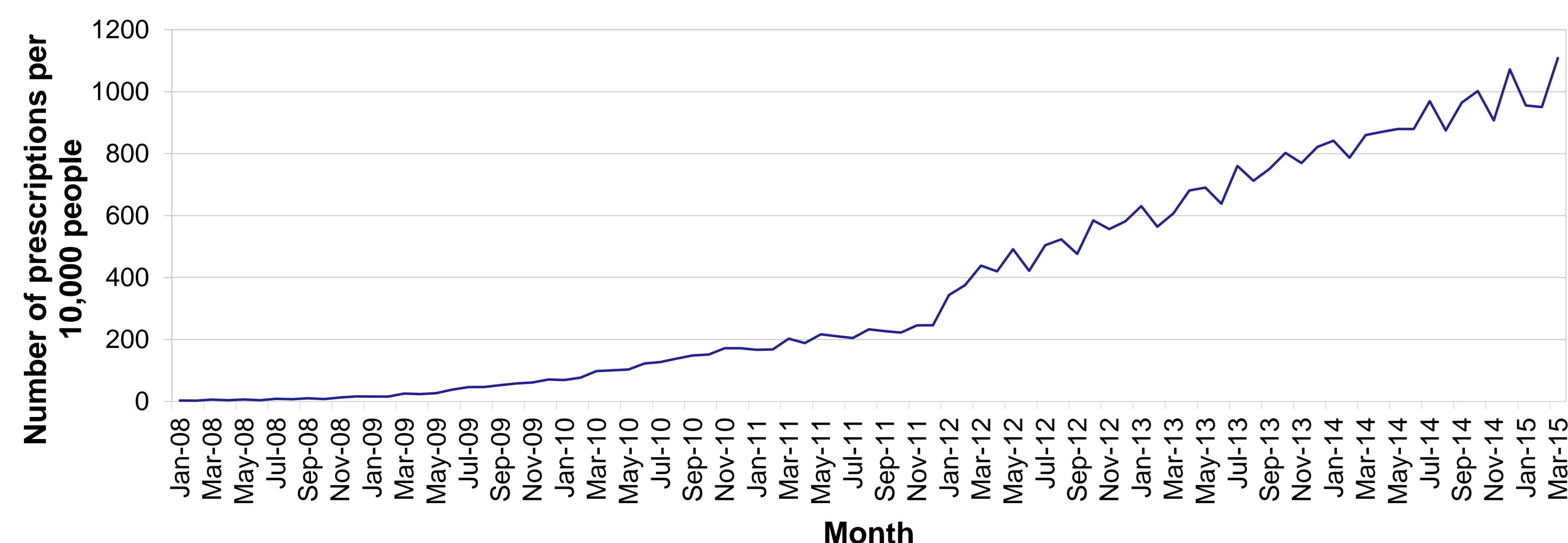
Results

We found DPP-4 inhibitors were one of the most commonly prescribed medications for type 2 diabetes (Table 1) with 6,306 (18.4%) people initiated on them since January 2008. Prescription rates are continuing to climb with a maximum rate at the end of our study period (March 2015) of 1108 prescriptions per 10,000 people with type 2 diabetes per month (Figure 1). The mean age of those prescribed DPP-4 inhibitors was 63.5 (SD 12.3) years with a mean body mass index (BMI) of 32.1 (SD 6.2) kg/m^2.

People living in areas of highest deprivation were less likely to be prescribed DPP-4 inhibitors (Figure 2). This effect was more pronounced when adjusting for confounders (Table 2).

Medication	Prescribed in last 10 years n (%)
Metformin	43,179 (73.5)
Thiazolidinediones	5,989 (10.2)
Sulfonylureas	20,819 (35.5)
Meglitinides	541 (0.9)
DPP-4 inhibitors	9,453 (16.1)
Alpha-glucosidase inhibitors	295 (0.5)
SGLT2 inhibitors	1,267 (2.2)
GLP-1 analogues	2,842 (4.8)
Insulin	9,442 (16.1)

Table 1. The proportion of people with type 2 diabetes prescribed medications in the last 10 years prior to 31st July 2015. This data is taken from the RWE updated cohort (n=58,717 people with type 2 diabetes).

Conclusion

DPP-4 use is now common and continues to increase. Use of these medications is lowest in the most deprived areas where diabetes control is often worst. The reasons for this discrepancy requires further investigation.

Characteristic	OR (95% CI)	P value
Female	1.00 [reference]	-
Male	1.06 (1.01-1.11)	0.018
Age (years)	0.99 (0.99-0.99)	<0.001
Deprivation		
IMD Quintile (missing)	0.91 (0.80-1.04)	0.185
IMD Quintile 1 (least deprived)	1.00 [reference]	-
IMD Quintile 2	0.97 (0.89-1.05)	0.401
IMD Quintile 3	0.97 (0.90-1.05)	0.492
IMD Quintile 4	0.89 (0.83-0.96)	0.002
IMD Quintile 5 (most deprived)	0.79 (0.73-0.85)	<0.001
BMI (kg/m2)	1.01 (1.01-1.02)	<0.001
Diabetes duration		
0-3 years	0.26 (0.24-0.28)	<0.001
4-6 years	0.60 (0.57-0.65)	<0.001
7-9 years	0.84 (0.79-0.89)	<0.001
≥10 years	1.00 [reference]	-
Glycaemic control		
Good (<53mmol/mol; <7%)	1.00 [reference]	-
Moderate (53-69mmol/mol; 7.0-8.5%)	3.44 (3.24-3.64)	<0.001
Poor (>69mmol/mol; >8.5%)	6.08 (5.70-6.49)	<0.001

Table 2. The odds ratio (OR) of being prescribed a DPP-4 inhibitor in primary care. IMD = index of multiple deprivation.

Key findings

- DPP-4 inhibitor use is continuing to increase and they are now the second most commonly used oral agent (after metformin).
- People with the highest levels of deprivation are less likely to be prescribed DPP-4 inhibitors.

References

1. Ward PR, Noyce PR, St Leger AS. *Are GP practice prescribing rates for coronary heart disease drugs equitable? A cross sectional analysis in four primary care trusts in England.* J Epidemiol Community Health 2004;58(2):89-96.

2. Department for Communities and Local Government. *English indices of deprivation.* Available from: https://www.gov.uk/government/collections/english-indices-of-deprivation

Poster also available online at:
http://www.clininf.eu/resources/posters.html

Scan for online version

Figure 1. Rates of prescribing for DPP-4 inhibitors dispensed per month in a population of 34,278 people with T2DM. Prescriptions for alogliptin, linagliptin, saxagliptin, sitagliptin, and vildagliptin are included.

Lilly