

Trends in Glucose Lowering Drug Utilization, Glycemic Control, and Severe Hypoglycaemia in Adults with Diabetes in Hong Kong 2002-2016

Supplemental Material

Table of Contents

Figure S1. Flow diagram of people with diabetes included in the study	2
Table S1. Trends in age- and sex- standardized percentage of CKD by eGFR (%) among adults with diabetes in Hong Kong 2002-2016	3
Table S2. Trends in insulin analogue use among adults with diabetes in Hong Kong 2002-2016	4
Figure S2. Age-stratified trends in standardized proportion (%) of glucose lowering drugs among adults with diabetes in Hong Kong 2002-2016	5
Figure S3. Sex-stratified trends in standardized proportion (%) of glucose lowering drugs among adults with diabetes in Hong Kong 2002-2016	6
Figure S4. Age- and sex-stratified trends in annual mean HbA1c levels among adults with diabetes in Hong Kong 2002-2016	7
Figure S5. Age-stratified trends in standardized proportion of HbA1c category among adults with diabetes in Hong Kong 2002-2016	8
Figure S6. Treatment regimen stratified trends in standardized proportion of HbA1c category among adults with diabetes in Hong Kong 2002-2016	9
Table S3. Joinpoint analysis of trends in standardized rate of severe hypoglycaemia with hospitalization (per 100 person-years) 2002-2016	10
Figure S7. Sensitivity analyses of trends in glucose lowering drugs (GLDs) utilization and annual mean HbA1c among adults with diabetes after excluding patients on no medications and those with newly diagnosed diabetes in Hong Kong 2002-2016	11
Figure S8. Sensitivity analyses of trends of mean HbA1c in the first year of diagnosis among newly diagnosed patients in Hong Kong 2002-2016.....	12

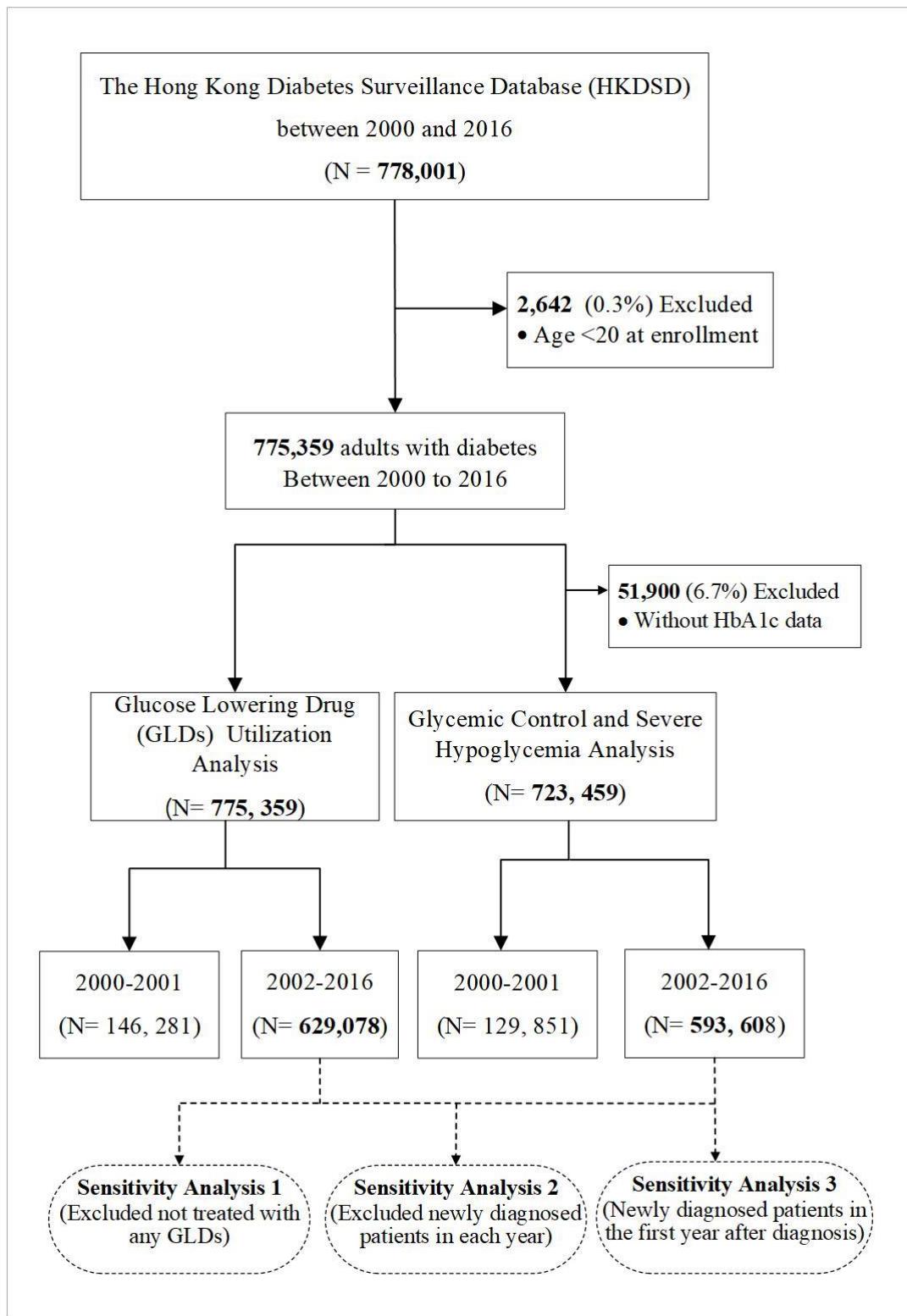


Figure S1. Flow diagram of people with diabetes included in the study

Table S1. Trends in age- and sex- standardized percentage of CKD by eGFR (%) among adults with diabetes in Hong Kong 2002-2016

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
eGFR: 30-60 mL/min/1.73 m²															
Overall	30.1	29.1	27.4	26.5	25.1	23.2	22.4	22.6	20.9	19.7	19.4	19	18.9	18.5	18.7
Men	27.6	27	26	25	24.1	22.4	21.4	21.7	20.2	19.2	19.1	18.8	18.7	18.4	18.5
Women	32.3	31	28.8	27.9	26.1	24	23.2	23.4	21.6	20.1	19.6	19.1	19	18.6	18.8
18-44	3	3	3.2	3	2.9	2.9	2.8	3	2.8	2.6	2.5	2.4	2.4	2.4	2.3
45-59	8.7	8.1	7.8	7.2	6.8	6	5.7	5.7	4.9	4.5	4.5	4.5	4.6	4.6	4.9
60-74	30.7	29.6	27.5	26.1	24.2	21.7	20.6	20.5	18.3	17	16.7	16.2	15.9	15.5	15.6
75+	54.2	52.8	50.2	49.5	47.6	45.1	44.1	44.9	42.8	40.7	40.1	39.4	39.3	38.7	38.8
eGFR: <30 mL/min/1.73 m²															
Overall	7	7.1	7	6.9	6.7	6.3	6.1	5.9	5.3	5	4.9	4.8	4.9	4.9	4.9
Men	6	6.1	6.1	6.1	5.9	5.5	5.4	5.3	4.8	4.5	4.5	4.5	4.6	4.6	4.7
Women	8	8.1	7.8	7.7	7.3	6.9	6.7	6.5	5.8	5.3	5.3	5.2	5.2	5.1	5.1
18-44	2	1.9	2.1	2.1	2.2	2	2	2	1.8	1.8	1.8	2	1.9	1.9	1.9
45-59	2.7	2.8	2.8	2.8	2.6	2.5	2.4	2.4	2.1	2	2	2	2	2.1	2.1
60-74	6.2	6.1	6	5.9	5.6	5.1	4.9	4.6	4	3.6	3.5	3.5	3.5	3.5	3.5
75+	13.2	13.4	13.1	13	12.7	12.2	11.9	11.7	10.7	10.1	10.1	9.9	10.1	9.9	9.9

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate

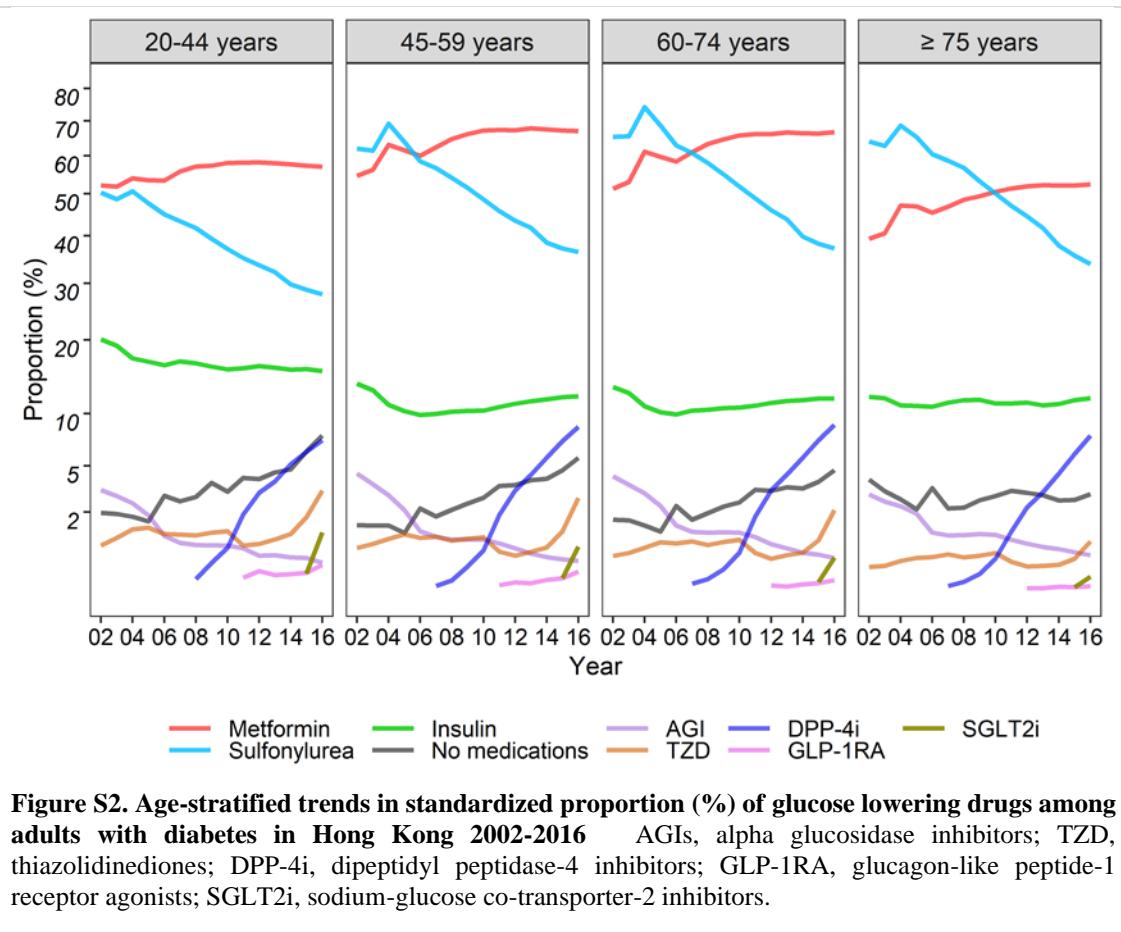
Table S2. Trends in insulin analogue use among adults with diabetes in Hong Kong 2002-2016

(A) Trends in insulin analogue use as a proportion (%) of total insulin use

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All	1.7	1.9	2.5	2.8	3.0	3.5	4.1	4.8	5.7	7.3	9.6	11.3	12.5	13.9	16.2
Men	1.8	2.0	2.5	2.8	2.9	3.3	3.9	4.6	5.5	7.5	9.8	11.5	12.7	14.1	16.3
Women	1.6	1.9	2.5	2.9	3.2	3.8	4.3	5.0	5.9	7.2	9.4	11.1	12.3	13.6	16.0
20-44	7.9	9.5	12.6	13.9	13.9	14.7	16.1	18.5	20.2	24.5	27.2	29.3	31.3	33.0	36.2
45-59	1.6	1.8	2.3	3.1	3.6	4.3	5.5	6.1	7.1	9.2	12.3	14.4	15.7	17.1	19.1
60-74	0.3	0.4	0.8	1.0	1.4	2.0	2.6	3.3	4.3	5.9	8.5	10.0	11.5	12.9	15.2
75+	0.2	0.1	0.3	0.4	0.5	0.9	1.0	1.6	2.5	3.2	4.7	6.2	7.2	8.7	11.3

(B) Trends in age- and sex-standardized proportion (%) of insulin analogue use

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Overall	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.9	1.2	1.4	1.5	1.8	2.0
Men	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.9	1.2	1.5	1.6	1.9	2.2
Women	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.8	1.1	1.3	1.5	1.7	1.9
20-44	1.5	1.7	2.1	2.3	2.2	2.5	2.6	3.0	3.1	3.8	4.4	4.6	4.9	5.2	5.5
45-59	0.2	0.2	0.2	0.3	0.4	0.4	0.6	0.6	0.7	1.0	1.4	1.7	1.9	2.1	2.4
60-74	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.6	1.0	1.1	1.3	1.5	1.8
75+	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.4



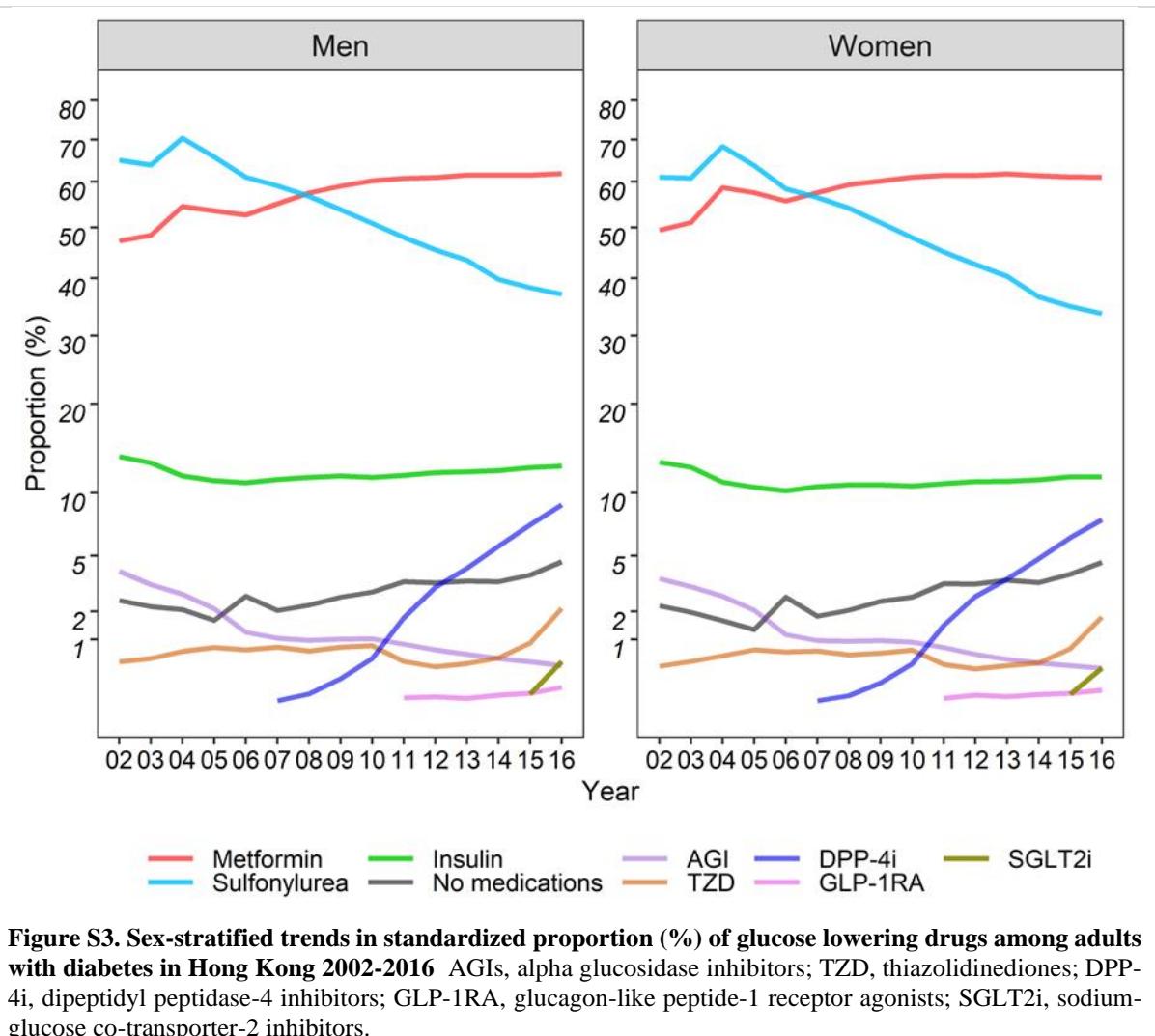
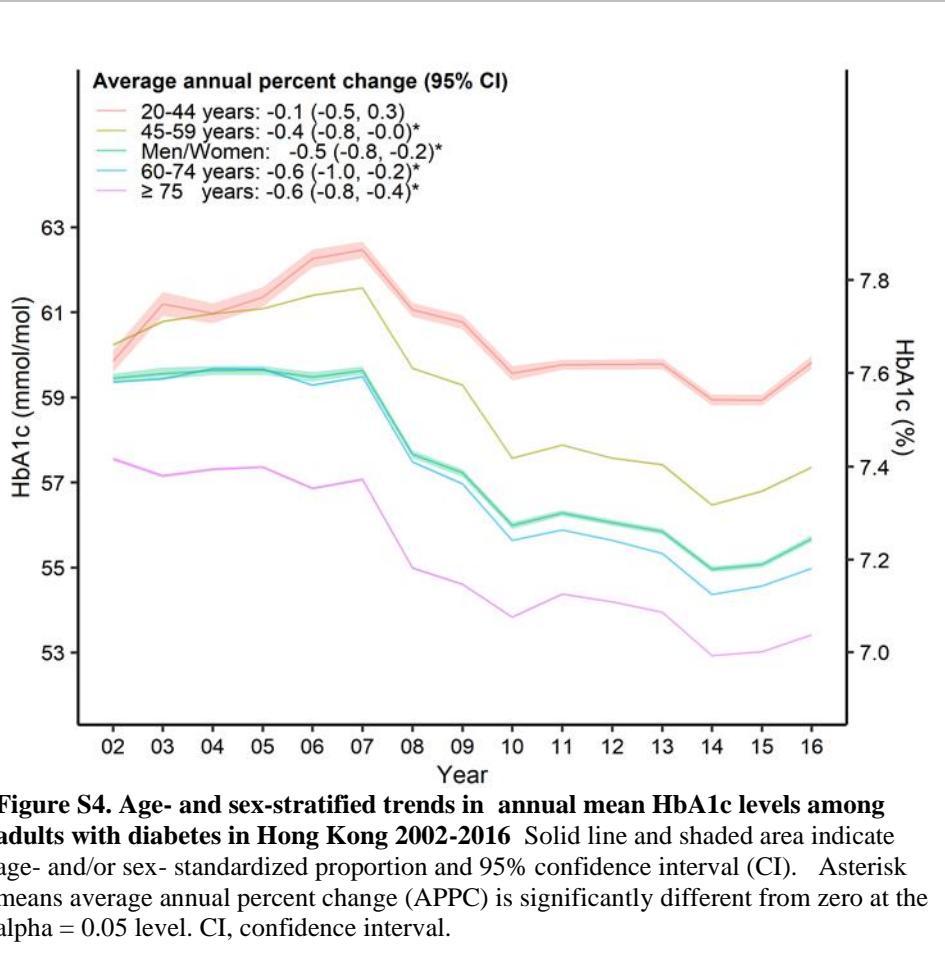


Figure S3. Sex-stratified trends in standardized proportion (%) of glucose lowering drugs among adults with diabetes in Hong Kong 2002-2016 AGIs, alpha glucosidase inhibitors; TZD, thiazolidinediones; DPP-4i, dipeptidyl peptidase-4 inhibitors; GLP-1RA, glucagon-like peptide-1 receptor agonists; SGLT2i, sodium-glucose co-transporter-2 inhibitors.



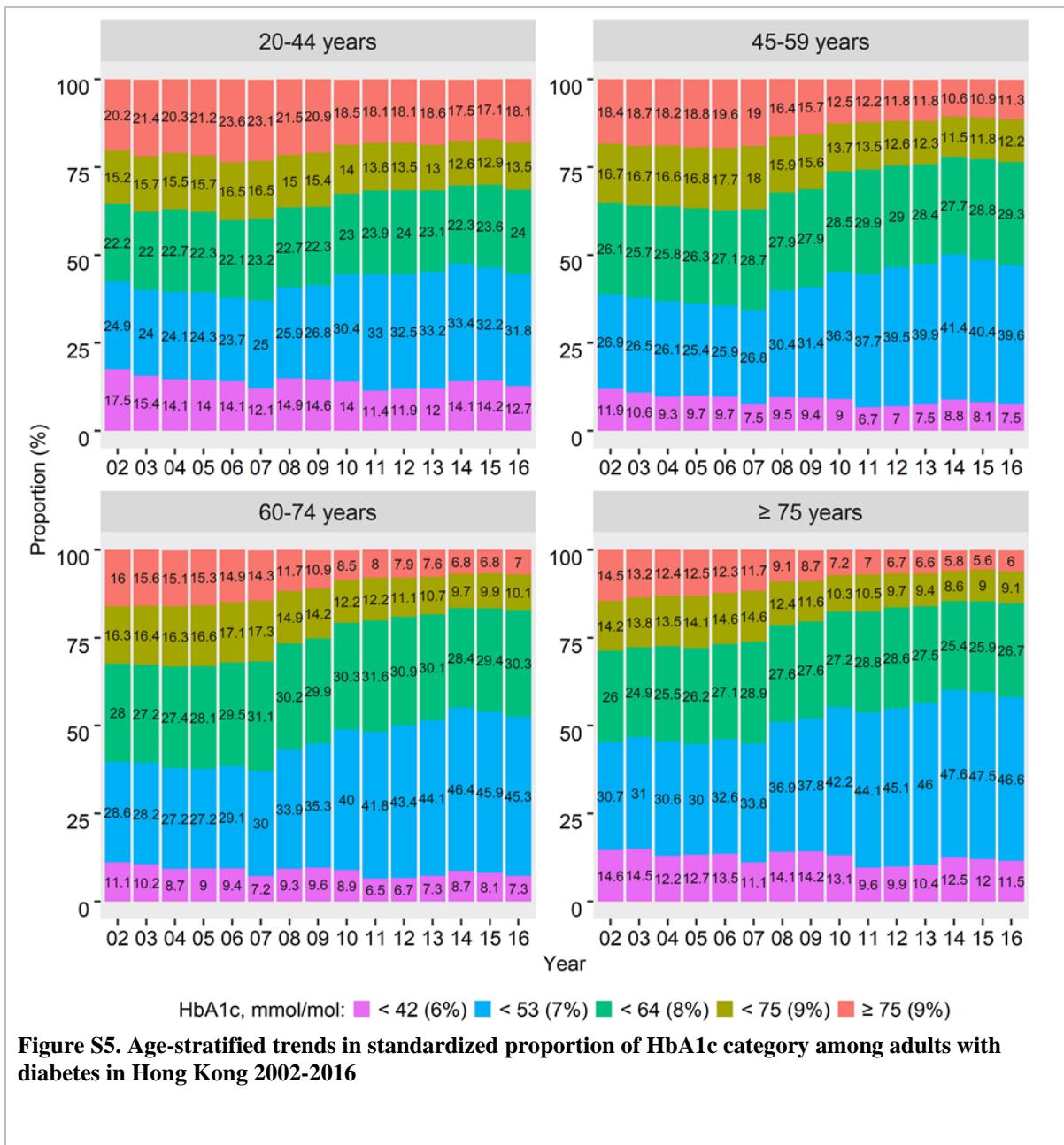


Figure S5. Age-stratified trends in standardized proportion of HbA1c category among adults with diabetes in Hong Kong 2002-2016

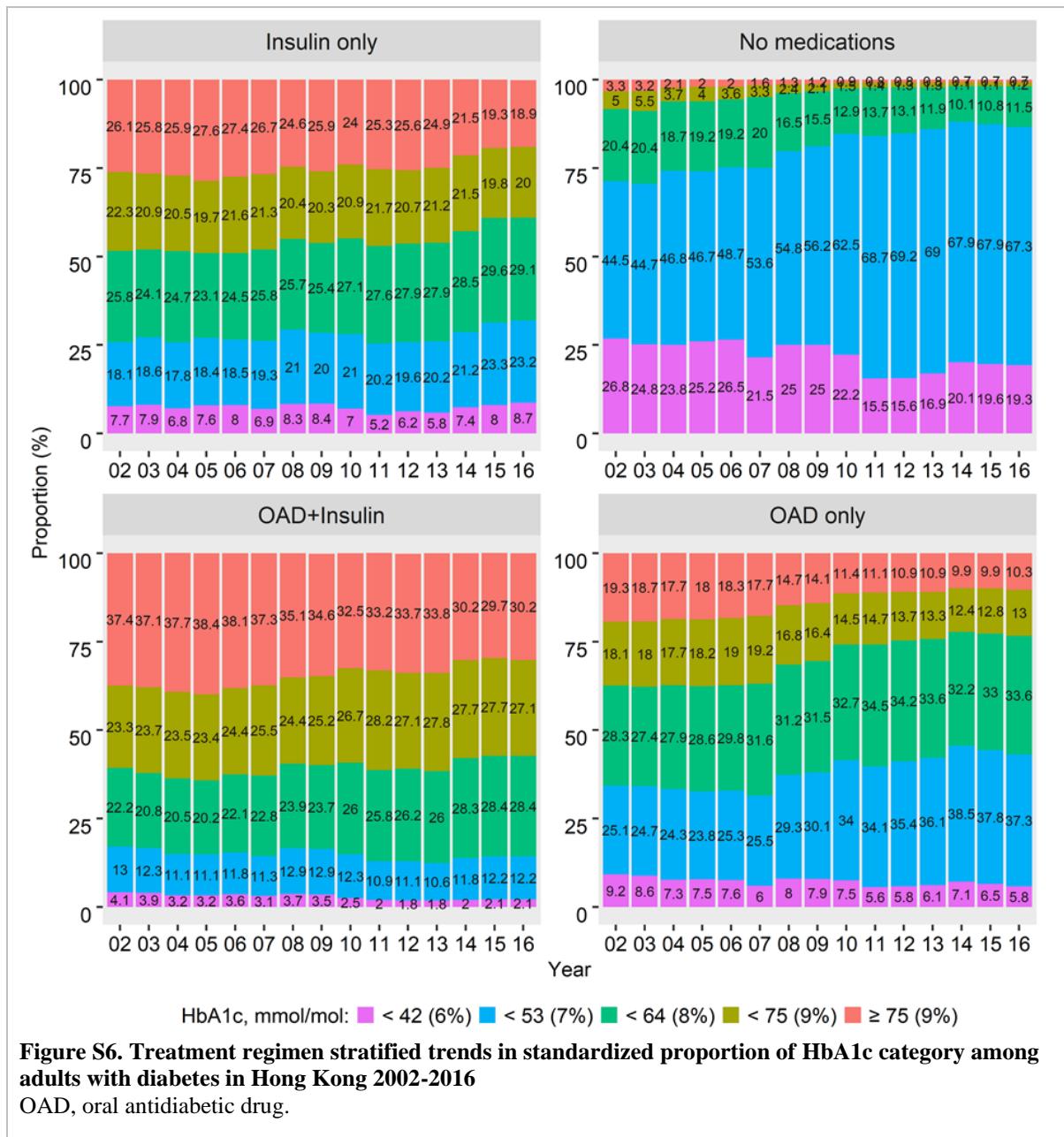


Figure S6. Treatment regimen stratified trends in standardized proportion of HbA1c category among adults with diabetes in Hong Kong 2002-2016
OAD, oral antidiabetic drug.

Table S3. Joinpoint analysis of trends in standardized rate of severe hypoglycaemia with hospitalization (per 100 person-years) 2002-2016

	Severe hypoglycaemia rate (100 patient-years)			Period 1		Period 2		Period 3	
	2002	2006	AAPC (95% CI)	Year	APC (95% CI)	Year	APC (95% CI)	Year	APC (95% CI)
Overall	4.2	1.3	-8.3 (-10.5, -6)*	2002-2006	-22.5 (-27.9, -16.7)*	2006-2010	9.4 (2.8, 16.5)*	2010-2016	-9.6 (-11.7, -7.4)*
Sex									
Men	4.2	1.3	-8.1 (-9.6, -6.5)*	2002-2006	-20.8 (-24.7, -16.7)*	2006-2010	7.7 (3.2, 12.4)*	2010-2016	-9.3 (-10.7, -7.8)*
Women	4.3	1.3	-8.4 (-11.6, -5)*	2002-2006	-23 (-29.8, -15.6)*	2006-2009	15.7 (1.9, 31.3)*	2009-2016	-9.5 (-12.3, -6.6)*
Age groups (years)									
20-44	4.0	1.6	-6.5 (-8.6, -4.3)*	2002-2005	-25.1 (-31.1, -18.6)*	2005-2010	8.1 (2.4, 14.2)*	2010-2016	-6.7 (-8.7, -4.6)*
45-59	3.0	0.8	-8.9 (-11.5, -6.3)*	2002-2005	-28.3 (-34.1, -21.9)*	2005-2010	8 (0.2, 16.3)*	2010-2016	-8.1 (-10.5, -5.5)*
60-74	4.3	1.1	-9.7 (-12.7, -6.6)*	2002-2006	-25 (-31.4, -17.9)*	2006-2010	8.3 (-1.1, 18.7)	2010-2016	-10.4 (-13.4, -7.3)*
75+	5.9	2.2	-6.9 (-9.5, -4.2)*	2002-2006	-16.5 (-21.5, -11.2)*	2006-2009	15.2 (3, 28.8)*	2009-2016	-9.2 (-11.6, -6.7)*
Treatment regimen									
OAD only	5.3	1.8	-7.8 (-10.2, -5.3)*	2002-2006	-24.9 (-30.6, -18.8)*	2006-2009	12.2 (4.6, 20.3)*	2009-2016	-7.3 (-9.7, -4.9)*
OAD + Insulin	20.0	7.8	-6.6 (-8.9, -4.3)*	2002-2006	-13.7 (-20.1, -6.7)*	2006-2009	4 (-2.5, 10.9)	2009-2016	-8.1 (-10.2, -6)*
Insulin only	12.1	8.4	-2.7 (-4.7, -0.7)*	2002-2006	-8.2 (-12.7, -3.5)*	2006-2010	11.5 (4.5, 18.9)*	2010-2016	-7.6 (-9.5, -5.6)*

* The Annual Percent Change (APC) and/or Average Annual Percent Change (AAPC) is significantly different from zero at the alpha = 0.05 level. CI, confidence interval; OAD, oral antidiabetic drug.

