

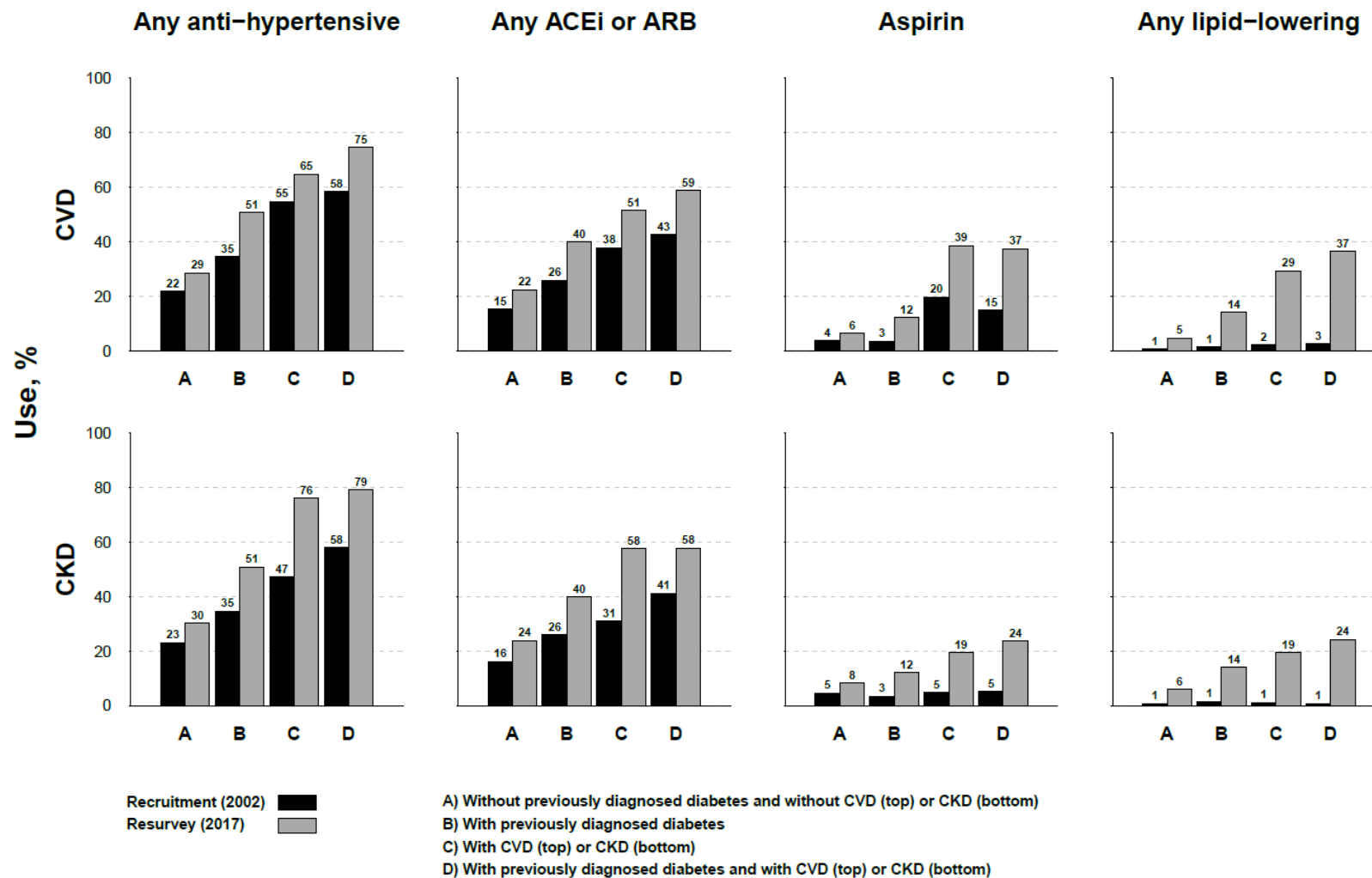
Changes in the diagnosis and management of diabetes in Mexico City between 1998-2004 and 2015-19

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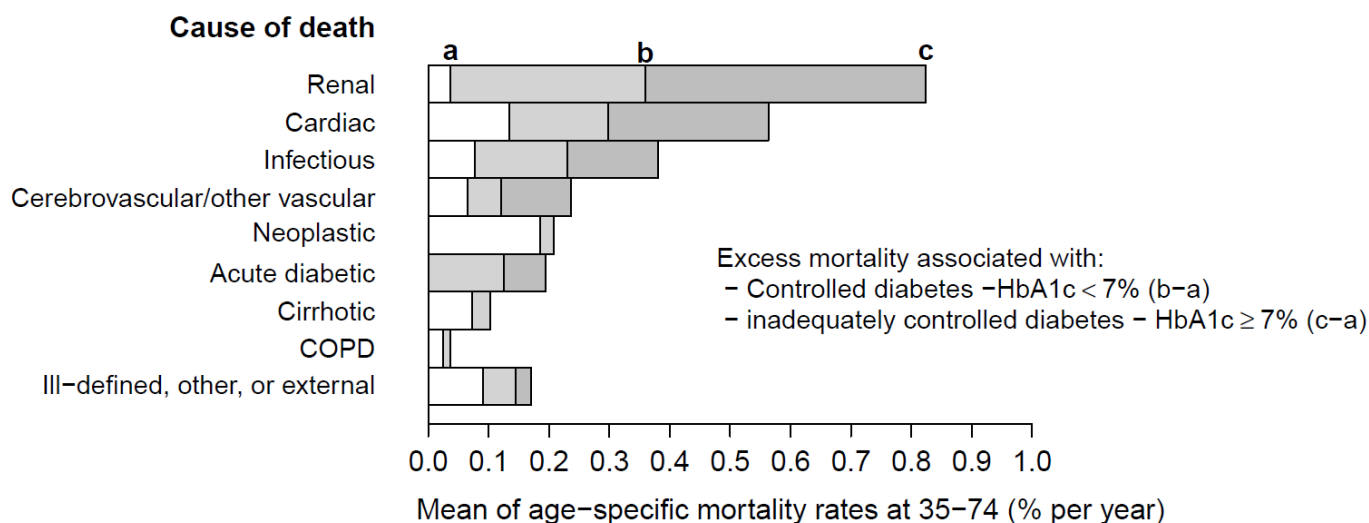
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Webfigure 1: Use of selected medications in participants aged 45-84 years by diabetes status and cardiovascular or chronic kidney disease history at recruitment (1998-2004) and resurvey (2015-2019)



Estimates are uniformly standardised for age, sex, and district of residence. ACEi denotes angiotensin-converting-enzyme inhibitors; ARB, angiotensin-II receptor blockers; CVD, cardiovascular disease; CKD, chronic kidney disease. Previously-diagnosed diabetes defined as self-reported medical diagnosis or use of anti-diabetes medication. CVD defined as self-reported history of either ischaemic heart disease or stroke. CKD defined by self-reported medical diagnosis. Any anti-hypertensive includes alpha-blockers, ACEi, ARB, beta-blockers, calcium channel blockers, centrally acting anti-hypertensives, and diuretics. Any lipid-lowering therapy included statins, fibrates, resins, and others.

Webfigure 2: Mortality rates at ages 35–74 years for each cause of death among participants with controlled and inadequately controlled diabetes at recruitment



Shown are the absolute estimated disease-specific rates of death for those with inadequately controlled diabetes ($HbA_{1c} \geq 7\%$, c), controlled diabetes ($HbA_{1c} < 7\%$, b), and no diabetes at recruitment (a). The analysis combines the percentages of participants in the current study who died between 35 and 74 years of age from particular diseases, the disease-specific rate ratios for death at 35 to 74 years of age, and 2012 national mortality rates in Mexico. The rates for all bars sum to the rates of death from any cause. The unshaded portions of the bars represent the mortality rate for the specific cause of death among participants without diabetes at recruitment. The weighted average of the death rates shown (for 16% of persons with inadequately controlled diabetes [$HbA_{1c} \geq 7\%$], 5% of persons with controlled diabetes [$HbA_{1c} < 7\%$], and 79% of persons without diabetes) match uniformly age-standardised 2012 Mexican national rates at ages 35 to 74 years of age for 50% men plus 50% women.

Webtable 1: Characteristics of participants aged 45-84 years at recruitment in 1998-2004 and at resurvey in 2015-2019, overall and by diabetes status*

	Recruitment (1998-2004)			Resurvey (2015-2019)		
	No diabetes (n=74479)	Diabetes (n=25144)	Overall (n=99623)	No diabetes (n=5707)	Diabetes (n=3279)	Overall (n=8986)
Men	34%	33%	34%	30%	28%	30%
Age, years						
Mean (SD)	58 (10)	61 (10)	59 (10)	65 (10)	67 (9)	66 (9)
45-54	46%	31%	42%	16%	9%	13%
55-64	27%	33%	29%	35%	34%	34%
65-74	18%	26%	20%	29%	36%	31%
75-84	9%	11%	9%	20%	22%	21%
Resident of Coyoacán (wealthier of the two districts)	42%	34%	40%	51%	54%	52%
Demographic and lifestyle characteristics						
University/college educated	11%	8%	10%	22%	17%	20%
Current smoker	24%	22%	23%	18%	16%	18%
Use of health services†						
Social security	52%	54%	53%	54%	57%	55%
Other public services	22%	21%	22%	31%	31%	31%
Private/Other	26%	25%	26%	15%	11%	13%
BMI, kg/m ²	28.4 (4.6)	28.8 (4.8)	28.5 (4.7)	28.2 (5.1)	29.1 (5.7)	28.4 (5.3)
Waist-hip ratio	0.93 (0.07)	0.94 (0.07)	0.93 (0.07)	0.95 (0.06)	0.96 (0.07)	0.95 (0.06)
Blood pressure						
SBP, mmHg	133 (17)	136 (18)	134 (17)	130 (21)	136 (23)	132 (22)
DBP, mmHg	85 (10)	86 (11)	85 (10)	80 (11)	81 (11)	80 (11)
SBP/DBP <140/90 mmHg	58%	51%	56%	66%	57%	63%
Diabetes						
Undiagnosed ‡	-	24%	6%	-	11%	3%
Previously-diagnosed §	-	76%	20%	-	89%	31%
HbA _{1c} , %	5.5 (5.3-5.8)	8.2 (6.8-10.2) ¶	5.7 (5.4-6.3)	5.5 (5.3-5.7)	7.3 (6.3-9.2) ¶	5.7 (5.4-6.4)
Self-reported comorbidities						
Cardiovascular disease	4%	6%	5%	6%	10%	7%
Coronary heart disease	3%	4%	3%	4%	7%	5%
Stroke	2%	2%	2%	2%	3%	2%
Chronic kidney disease	1%	2%	1%	1%	4%	2%

Mean (SD), median (IQR) or % shown. BMI, body-mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; HbA_{1c}, glycosylated haemoglobin.

* With the exception of age, sex and district, all estimates are uniformly standardised for age, sex and district.

† At recruitment, the question related to use of health services was added part way through recruitment; the percentages shown relate to 51,972 participants aged 45-84 years who were asked this question, all of which resided at the Iztapalapa district (at resurvey, this information was requested from all participants).

‡ No previous diagnosis of diabetes but measured HbA_{1c} ≥6.5%

§ Mean duration of diabetes was 10.9 (SD 8.3) years at recruitment 11.5 (SD 9.5) years at resurvey.

¶ Of those with diabetes, the proportion with HbA_{1c} ≥10% was 28% at recruitment and 18% at resurvey.

Webtable 2: Number of glucose-lowering medications reportedly taken in participants aged 45-84 years with previously-diagnosed diabetes at recruitment (1998-2004) and at resurvey (2015-2019)

Age, years	Glucose-lowering medication use (number of drugs)		
	0	1	≥2
Recruitment 2002			
45-54	22%	62%	15%
55-64	21%	66%	14%
65-74	18%	68%	13%
75-84	18%	71%	11%
Age-standardised total, 45-84 years	20%	67%	13%
Resurvey 2017			
45-54	8%	50%	42%
55-64	9%	49%	43%
65-74	8%	47%	45%
75-84	8%	54%	38%
Age-standardised total, 45-84 years	8%	50%	42%

Percentages standardised for district and sex. The overall estimates for ages 45-84 are uniformly age-standardised (ie, they are the simple average of the four ten-year estimates from 45-54 years to 75-84 years).

Webtable 3: Excess mortality at ages 35-74 associated with controlled (HbA1c <7%) or inadequately controlled diabetes at recruitment (1998-2004) among 135 292 participants with no other chronic disease

Age at recruitment	No. participants			No. deaths during follow-up (& before age 75) among those with			Mortality RR, 95% CI (versus no diabetes)*		Excess deaths associated with diabetes (% of total)		
	Controlled diabetes	Inadequately controlled diabetes	No diabetes	Controlled diabetes	Inadequately controlled diabetes	No diabetes	Controlled diabetes	Inadequately controlled diabetes	Controlled diabetes	Inadequately controlled diabetes	All diabetes
35-44	933	2771	47,946	67	435	1046	3.0 (2.3, 3.9)	7.0 (6.2, 7.8)	45 (3%)	373 (24%)	418 (27%)
45-54	1729	5522	32,734	200	1171	1474	2.5 (2.2, 2.9)	4.7 (4.4, 5.1)	121 (4%)	924 (32%)	1045 (37%)
55-64	1994	5458	18,931	352	1516	1695	2.1 (1.9, 2.3)	3.4 (3.1, 3.6)	183 (5%)	1067 (30%)	1250 (35%)
65-74	1682	3836	11,756	214	605	690	2.3 (2.0, 2.7)	2.7 (2.4, 3.0)	121 (8%)	381 (25%)	502 (33%)
Total	6338	17,587	111,367	833	3727	4905	2.3 (2.1, 2.5)	3.9 (3.8, 4.1)	470 (5%)	2745 (29%)	3215 (34%)

*Age-specific mortality rate ratio estimates for those with versus without diabetes at recruitment are adjusted for sex, district, education, smoking, height, weight, waist and hip circumference. Analyses exclude those with any prior diagnosis of chronic kidney disease or ischaemic heart disease, stroke, cirrhosis, cancer or emphysema.

Diabetes defined as self-reported previous-medical diagnosis, use of anti-diabetic medication, or measured HbA1c $\geq 6.5\%$. Among those with diabetes, glycaemic control was defined as HbA1c <7%.

Webtable 4: Age-specific estimates of the prevalence of diabetes in Mexico and Mexico City for the years 2006 and 2017

Age, years	Mexico		Mexico City	
	2006	2017	2006	2017
45 to 49	17%	20%	17%	23%
50 to 54	21%	26%	21%	28%
55 to 59	25%	30%	25%	32%
60 to 64	28%	32%	28%	35%
65 to 69	29%	33%	30%	36%
70 to 74	30%	34%	30%	36%
75 to 79	30%	34%	30%	36%
80 to 84	30%	33%	30%	35%
Age standardised total, 45 to 84 years	26%	30%	26%	33%

Data obtained from the Global Burden of Disease project at <http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2017-permalink/2703d0d555dbeb6994df25d288b8ef60> (accessed on 28 May 2020)