Appendix

Serum and urine specimens were processed within one hour and kept frozen at -40 °C. EDTA whole blood tubes were shaken and kept in the original collection tubes at 4 °C in GNHIES98, but were frozen at -40 °C in DEGS1. Specimens were transported by car to the Robert Koch Institute central epidemiological laboratory unit for analysis. Laboratory analyses were conducted at the Robert Koch Institute Central Epidemiological Research Laboratory within six weeks of blood sample collection, except for serum creatinine in GNHIES98, which was assessed retrospectively in previously unthawed samples stored at -40 °C.

In both national health surveys, total serum cholesterol was measured using the enzymatic cholesterol oxidase-peroxidase 4-aminophenazone (CHOD-PAP) method on automated analyzers (GNHIES98: MEGA, Merck, Germany; DEGS1: Architect ci8200, Abbott, Germany). A kinetic alkaline picrate assay (Architect ci8200, Abbott, Germany) was used to determine serum creatinine.

HbA1c was measured using a Diamat high performance liquid chromatography (HPLC) analyzer (Bio-Rad Laboratories, Munich Germany) and reagents from Recipe (Recipe Chemicals and Instruments, Munich) in GNHIES98 and an immunoturbidimetric method in DEGS1 (Architect ci8200; Abbott, Germany). For the Abbott assay calibrations and controls were traceable to both, the National Glycohemoglobin Standardization Program (NGSP) and the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) reference. Prior to 2003 all Bio-Rad HbA1c analysis systems were traceable to the NGSP standardizing measurements to the Diabetes Control and Complications Trial (DCCT) reference (DCCT Research Group 1993). HbA1c results are reported in NGSP units (% of total hemoglobin) as well as IFCC units (mmol/mol total hemoglobin) using the IFCC-NGSP master equation (Hoelzel et al. 2004). As HbA1c analysis methods changed between surveys and as Bio-Rad HPLC analyses were based on assay reagents from a different company, we compared the HbA1c distribution (appendix Figure 1A) in a metabolically healthy subset of study participants aged 18-39 years as previously described (Selvin et al. 2014). The metabolically healthy subset was defined as follows: men and non-pregnant women 18-39 years without known diabetes, body mass index: 18.5 to <25 kg/m^2, no hypertension, no hyperlipidemia and no cholesterol lowering medication, and total cholesterol < 200 mg/dL (Selvin et al. 2014). In both surveys HbA1c was normally distributed and density distributions showed good overlap, suggesting comparability between HbA1c measurement methods between the two surveys.

Figure 1A: Density distribution of HbA1c in a metabolically healthy subset of study participants 18-39 years. German national health interview and examination surveys 1997-1999 (GNHIES98) and 2008-2011 (DEGS1)

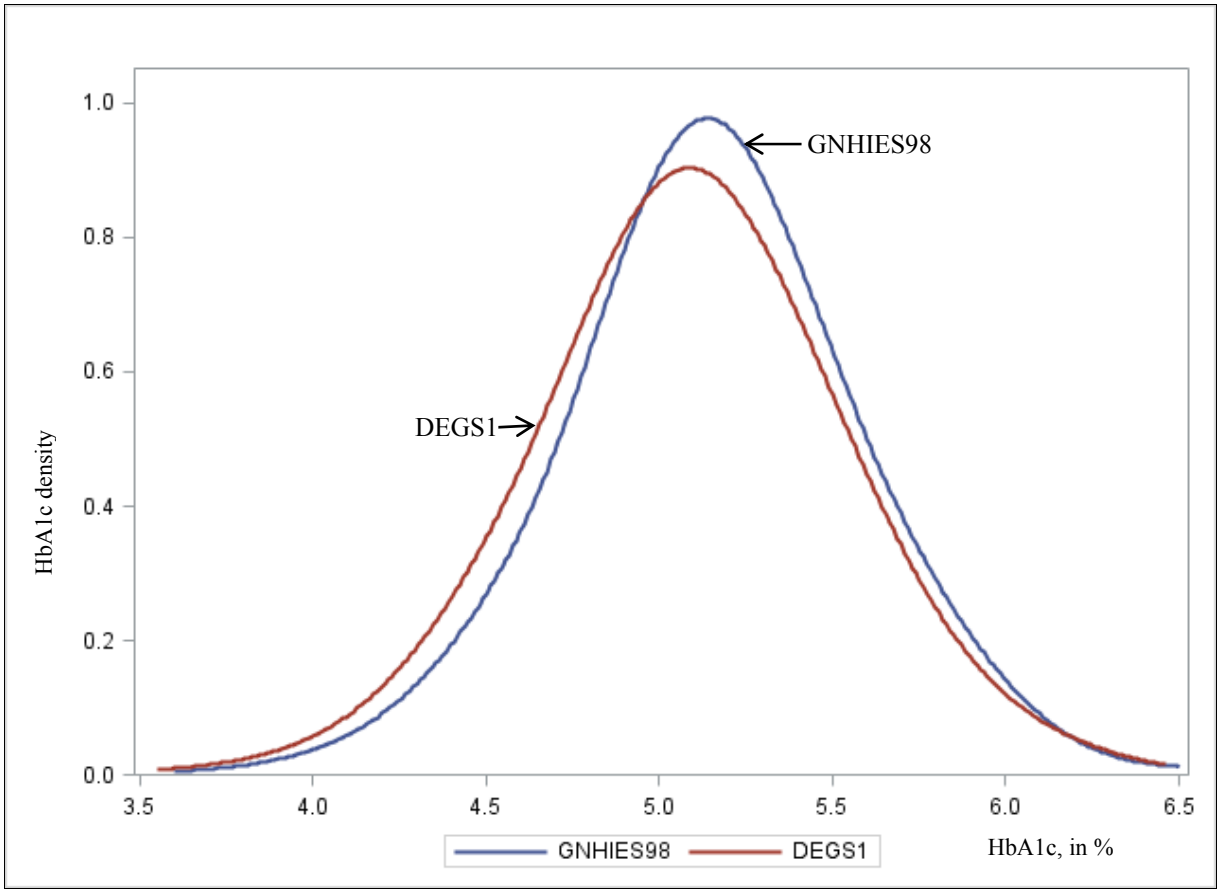

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Table 1A: P values of interaction terms in multivariable regression models‡ for diabetes care indicators

Diabetes care indicators	survey*sex	survey*age group	survey*community size	survey*region	survey*educational level	survey*diabetes duration
HbA1c <6.5% (48 mmol/mol)	0.151	0.369	0.295	0.594	**0.072**	0.852
HbA1c <7.0% (53 mmol/mol)	**0.031**	0.329	0.944	0.587	**0.014**	0.564
HbA1c <7.5% (58 mmol/mol)	0.225	0.202	0.798	0.458	**0.067**	0.459
HbA1c <8.0% (64 mmol/mol)	0.323	**0.061**	**0.088**	0.884	**0.014**	0.668
HbA1c ≥9.0% (75 mmol/mol)	0.502	0.700	0.261	0.168	0.258	0.660
Individualized HbA1c target	0.180	**0.032**	0.998	0.805	**0.010**	0.580
Total cholesterol <190 mg/dl	**0.075**	0.614	0.267	0.807	0.341	0.283
Total cholesterol <240mg/dl	0.258	0.703	0.690	0.356	0.293	0.107
SBP<130 & DBP<80 mm Hg	0.971	0.250	0.146	**0.013**	0.273	0.514
SBP<140 & DBP<90 mm Hg	0.918	**0.036**	0.249	0.255	0.471	0.333
Body mass index <30 kg/m^2	0.796	0.924	0.130	0.235	**0.096**	0.924
Currently not smoking	0.145	0.841	0.359	0.394	**0.097**	0.205
Engaging in any sports activity	0.276	**0.089**	0.279	0.628	0.177	0.891
Combination goal 1	(interactions not tested due to small number of observations)					
Combination goal 2	0.287	0.822	0.869	**0.007**	**0.095**	**0.065**
Last eye exam <=12 months	0.937	**0.085**	0.806	0.696	0.299	0.530
Last foot exam <=12 months	0.249	0.232	**0.029**	0.290	**0.016**	0.116
Self-monitoring of blood glucose	0.370	0.768	0.612	0.134	0.530	0.438
Holding a diabetes passport	0.229	0.512	0.301	0.214	0.355	0.936
Any lipid lowering medication	0.705	0.118	0.619	0.165	0.251	0.837
Statin use	0.980	0.257	0.439	**0.070**	**0.055**	0.820
Any ACE inhibitor or ARB	**0.028**	0.939	0.213	0.117	**0.041**	**0.019**
Any diabetes-specific complication	0.641	0.203	0.180	0.164	0.584	0.951
Comorbid CVD	0.243	0.226	0.419	0.603	0.600	0.254
Comorbid chronic kidney disease	0.790	0.462	0.277	0.171	0.606	0.705

‡ Obtained from separate logistic regression models of diabetes care indicators on survey period (GNHIES98, DEGS1), sex, age group (45-64, 65-79 years), region (northwest, central west, northeast, central east, south), community size (rural town, small, middle-sized and large cities), educational level (primary, middle, high), duration of diabetes (<5, 5-14, >=15 years), and product terms testing first-order interactions between survey period and each covariable separately.

p-values in bold print denote statistical significant product terms at $p<0.100$.