Published in final edited form as:

J Health Care Poor Underserved. 2020 ; 31(2): 1007–1017. doi:10.1353/hpu.2020.0074.

The Impact of the Great Recession on Diabetes Management in a High-Risk Population

Eve Walter, PhD,

Institute for Family Health and the Icahn School of Medicine at Mount Sinai.

Sharon Avgush, MD,

Institute for Family Health.

Catherine Daly, OMS-IV,

College of Osteopathic Medicine at New York Institute of Technology.

Casey Crump, MD, PhD

Departments of Family Medicine and Community Health and of Population Health Science and Policy at the Icahn School of Medicine at Mount Sinai.

Abstract

This study examined the effects of the Great Recession (GR) on type 2 diabetes management using individual-level data in a historically underserved, high-risk patient population at a federally qualified health center (FQHC). Comparing three time periods (pre-recession [2004–2006], recession [2007–2009], and recession recovery [2010–2012]), we found that patients had significant increases in blood pressure and body mass index as they entered the GR. Conversely, we found a significant decrease in HbA1c across the study period likely influenced by interventions to improve HbA1c during this time at this FQHC. While previous studies on the impact of the GR have focused primarily on the middle class, our findings suggest that high-risk patients who are already struggling to maintain their health may be further hurt by economic downturns. Intensive programs to serve these patients can act as a safety net to buffer the potential health impacts of these downturns.

Keywords

diabetes mellitus; economic recession; Great Recession; healthcare disparities; medically underserved; type 2 diabetes

The Great Recession (GR) of 2007–2009 was characterized by a sharp rise in unemployment and housing foreclosures. In the aftermath, public health officials have sought to understand the impact of this economic downturn on mental and physical health. Several studies have reported that the GR adversely affected food security,¹ mental health,^{2–5} and receipt of health care.^{1,6} However, most studies have focused primarily on middle-class populations, exploring impacts of job loss or foreclosure on the loss of health insurance, and did not

include lower-income populations. Furthermore, most prior studies were conducted on a macro-level because they lacked individual-level data. Although macro-level analyses can provide insights into the potential ecological impacts of the GR, they are unable to examine its individual-level impacts.

Prior studies of diabetes outcomes associated with the GR in middle-class populations have yielded inconsistent results. For example, one study of middle-income, privately-insured patients with diabetes reported that GR-associated foreclosure did not affect average hemoglobin A1c (HbA1c) levels.⁷ However, Seeman et al found significant increases in blood pressure and glucose levels among individuals with diabetes during the recession compared with their prior levels.⁸ Furthermore, these increases were found to vary by educational attainment and home ownership, indicating the importance of accounting for socioeconomic factors on the individual level.

It can be assumed that these prior studies have specifically focused on middle-class populations because they were viewed as most likely to experience the loss of health insurance or home ownership through job loss. In contrast, poorer populations may have been expected to feel less impact of a recession because they may already lack health insurance or home ownership. As a result of this assumption, assessments of the impacts of the GR on poorer Americans are notably absent from the literature, or limited to more general calls for improved safety nets during economic hard times.⁹ Consequently, little is known about how economic downturns may affect the health of low-income populations. The GR may potentially have a larger impact in certain subgroups that are already economically challenged, especially for management of chronic diseases that are highly prevalent such as diabetes.¹⁰⁻¹⁵ For example, food insecurity, which may worsen during a recession, has important effects on diabetes self-care because dietary modifications are necessary for glycemic control,¹⁶⁻¹⁸ and high-caloric, high-fat foods are often less expensive than healthier alternatives.

We sought to address these knowledge gaps by examining the effects of the GR on type 2 diabetes management using individual-level data in a historically underserved, high-risk patient population at a federally qualified health center (FQHC). This FQHC was an ideal setting because it is among the few health care systems that have (1) engaged in electronic health records (EHR) since before the recession and (2) provided primary care to populations designated as *medically underserved*, frequently serving as their single source of care for much of their lifetime. This study assessed the potential impact of the GR on individual-level outcomes among patients with diabetes, which is highly prevalent and requires good health care access for effective management.

Methods

Design and sample.

This study examined the impact of the Great Recession on diabetes management by comparing outcomes from three time periods: pre-recession (2004–2006), recession (2007–2009), and recession recovery (2010–2012). The patient sample included all patients, regardless of age, seen at a single primary care organization, the Institute for Family Health,

who were identified in their EHR as having type 2 diabetes anytime between January 2004 and December 2014. The Institute for Family Health is a FQHC and was the first community health center network in New York State to achieve the highest-level recognition as a Patient Centered Medical Home from the National Committee for Quality Assurance. It operates 31 community-based health care sites, all in medically underserved areas, with urban areas designated either for their low-income neighborhoods or the vulnerable populations they serve and rural sites based on a dearth of primary care clinicians. All practices operate on a family medicine model and the vast majority of primary care clinicians are trained in family medicine.

Measures.

Socioeconomic measures included gender, age (as of 2006), race/ethnicity, and insurance type (at the last recorded visit during the follow-up period). Tobacco smoking (yes/no) was based on any documentation during the nine-year period. Relationship status (most recent) was categorized as currently not in a relationship (single, divorced, separated, widowed), currently in a relationship (married, cohabitating), or unknown.

The primary clinical outcomes were hemoglobin A1c (HbA1c), body mass index (BMI), and blood pressure (BP). HbA1c is commonly used to monitor diabetes due to its clinical utility, cost-effectiveness, and wide availability among health care facilities.¹⁹ Stable control of diabetes is defined as HbA1c less than 7.0 (53 mmol/mol).²⁰ Obesity, defined as BMI greater than or equal to 30, is a known risk factor for diabetes.²¹ Lastly, the American Diabetes Association recommends a goal systolic blood pressure of less than 130 mmHg, which has been shown to reduce diabetes complications.^{22,23} Each of these measures were averaged (if more than one in a year) for an annual value as well as averaged over the three time periods: pre-recession (2004–2006), recession (2007–2009), and post-recession (2010–2012).

Analyses.

Descriptive analyses were performed using the Maentel-Haenszel chi-square test for significance. Repeated measures generalized linear models were conducted to assess for changes in clinical outcomes while accounting for clustering within individual patients. Mean HbA1c and BP levels from each year were compared to the subsequent year. BMI data were too sparse for annual comparisons and therefore this outcome was assessed for only the three time periods (pre-recession, recession, post-recession). Paired t-tests were used to compare mean change from pre-recession to recession and from recession to post-recession for each of the three clinical outcomes in different sociodemographic subgroups.

Results

Sample summary.

A total of 1,021 patients with diabetes had at least one documented BMI, BP, and HbA1c measurement for each of the three time periods (pre-recession, recession, post-recession). The majority of these patients were female, non-White, and were on Medicaid or Medicare (Table 1). Children with diabetes were included but constituted only 1% of the sample. At

baseline (pre-recession), the average systolic BP was in the “pre-high” stage (mean systolic BP 126.8 mmHg). Blood pressure was significantly higher at baseline for patients aged 50 and older, males, and Blacks compared with their counterparts. Consistent with a high-risk diabetic population, average baseline HbA1c levels were high (mean 10.4). HbA1c levels were significantly higher at baseline for patients under age 18 than older patients. At baseline the average BMI was in the obese category (mean BMI 32.3). Body mass index was significantly higher among females or those between ages 18 and 49 compared with their counterparts.

Annual trends in clinical outcomes pre-recession through post-recession.

A total of 680 patients had a recorded BP at least once annually, and 274 patients had a recorded HbA1c at least once annually during the study period. Only 58 patients had a recorded BMI at least once annually; therefore to examine trends in BMI robustly the cohort was restricted instead to all patients with at least one recorded BMI per time period (pre-recession, recession, post-recession) resulting in a BMI trend sample of 1,021 patients.

Mean changes in HbA1c and BP from one year to the next were examined, as well as mean changes in BMI between time periods, while accounting for repeated measures clustering (Figure 1). HbA1c levels consistently declined over the entire study period. Blood pressure showed an annual decline leading up to the recession, but this reversed direction during the three years of the recession, with the largest increase occurring in 2008. Blood pressure then began declining again during the three years after the recession. BMI increased slightly entering the recession followed by a slight decrease just after the recession.

Pre-recession to recession periods by socioeconomic factors.

From pre-recession to recession, a significant overall increase in BP and BMI and a significant decrease in HbA1c were identified (Table 2, first row). The increase in BP during the recession appeared to be driven especially by increases among females, patients aged 18–49 at baseline, and patients who were non-Hispanic. The significant decline in HbA1c levels was particularly pronounced among patients aged 18–29, non-Whites, patients documented as being in a relationship, those without private insurance, and those with reported smoking. As indicated in Figure 1, the significant overall decline in HbA1c was primarily attributable to a decline in 2009, near the end of the recession. The statistically significant increase in BMI entering the recession was most notable among those younger than 18 years, with private insurance, and/or non-smokers.

Recession to post-recession periods by socioeconomic factors.

Following the recession, BP showed no significant overall change, HbA1c continued to decline significantly, and BMI changed directions to an overall significant decline, reaching a lower level than the pre-recession period (Table 2). Stratified by age, BP increased significantly among patients younger than 50 years but declined among those aged 70 or older; this could potentially be due to the loss of older patients who had more severe hypertension in the cohort. HbA1c continued to show a significant decline after the recession, which was most pronounced among patients under age 18 and Hispanics. The only patients without a significant decline in HbA1c post-recession were those who lacked

health insurance. Whereas BMI consistently increased entering the recession, it declined in most subgroups following the recession. This significant decline in BMI appeared most pronounced among patients who were female, White, and/or aged 50–69 at baseline.

Discussion

This study examined patterns of diabetes control among patients seen at a federally qualified health center before, during, and after the Great Recession (GR) (2007–2009). We found that these patients had significant increases in blood pressure and BMI as they entered the GR. After the recession, BP showed disparate changes—increasing in certain subgroups and decreasing in others—whereas BMI significantly improved as patients exited the GR. These findings extend those by Seeman et al⁸ who also reported increases in BP among patients entering the recession but did not have post-recession data available for analysis. As Seeman and colleagues note in their research, the GR is a potential source of emotional stress that can affect a person's physical health, including such measures as BP, which for some may take longer to resolve. The present study, by also examining outcomes in the three years following the recession, adds to this work and suggests that BP appeared to stabilize and BMI declined during this recovery period.

We also found that HbA1c declined during the recession, which was surprising given the increases in BP and BMI observed during this period. Interestingly, these findings are similar to those noted by Seeman, who found no significant increase in blood glucose levels entering the recession.⁸ The significant decrease that we observed was likely influenced by a concerted effort to improve HbA1c during this time through intensive outreach and education at this FQHC.²⁴

We found that BP and BMI tended to worsen during the recession among patients documented as having private insurance at their most recent visit at the end of follow-up.²⁵ Unfortunately, without the ability to track prior insurance changes, it was unclear whether these individuals were insured during all time periods examined. However, these ultimately privately-insured patients did show more favorable outcomes after the end of the recession. Prior evidence has suggested that elderly adults fared better during the Great Recession because they were often retired and had smaller declines in wealth.²⁶ We found that patients aged 70 and older were the only subgroup to show improvements in all three outcomes during and after the recession. Most of these patients likely had Medicare and therefore experienced no loss of this insurance during the recession, potentially contributing to better outcomes. Alternatively, improved outcomes in this subgroup could be related to loss of less healthy older patients during the study period.

Our study focused on historically underserved patients seen at a federally qualified health center in an urban setting who may be more vulnerable to adverse health effects of the GR than the average American. We found that the GR was associated with worsening of certain health outcomes in these patients, including BP control and BMI. Importantly, these adverse outcomes were observed in patients who continued to have medical visits across the study period and therefore were available for analysis. Health outcomes may have been even worse among patients who were lost to follow-up, whom we were unable to assess. However,

despite worsening of certain outcomes, there was also evidence that interventions to improve HbA1c were effective during and after the GR. The FQHC serves as a safety net that potentially helped buffer our patient population from certain adverse effects of the GR.

The present study has several strengths, including the ability to examine multiple diabetes-related outcomes before, during, and after the GR in a high-risk population that was previously understudied. In addition, we examined how changes in these outcomes potentially vary in socioeconomic subgroups. Study limitations include the lack of data on other potentially important socioeconomic factors, such as education level, home ownership, employment, and changes in marital/cohabitating status or insurance status during the study period. This study was limited to EHR data and hence these measures were either unavailable or too sparse for analysis. In particular, last known insurance status was examined because information on insurance changes across the nine years of follow-up was unavailable. As a result, the potential impact of the recession on increased reliance on public insurance could not be assessed. The length of follow-up also raises the possibility of survivorship bias particularly among older patients. Finally, broader policy changes (e.g. Affordable Care Act) and demographic trends (e.g. increasing obesity) during the study period may potentially have contributed to observed changes in outcomes over time.

Our extensive EHR data provided the unique opportunity to follow patients into and out of the recession and assess trends in multiple health outcomes. While most previous investigations have focused on the middle class—who may see the greatest economic shift due to loss of jobs or health care—we found that patients who are already struggling to maintain their health may be further hurt by economic downturns. However, intensive programs to serve these patients can act as a safety net to buffer the potential health impacts of these downturns.

References

1. Burgard SA, Ailshire JA, Kalousova L. The Great Recession and health: people, populations, and disparities. *Ann Am Acad Pol Soc Sci.* 2013;650(1):194–213. 10.1177/0002716213500212
2. Modrek S, Hamad R, Cullen MR. Psychological well-being during the great recession: changes in mental health care utilization in an occupational cohort. *Am J Public Health.* 2015 2;105(2):304–10. 10.2105/AJPH.2014.302219 PMid:25521885 [PubMed: 25521885]
3. Cagney KA, Browning CR, Iveniuk J, et al. The onset of depression during the Great Recession: foreclosure and older adult mental health. *Am J Public Health.* 2014 3;104(3):498–505. Epub 2014 Jan 21. 10.2105/AJPH.2013.301566 PMid:24446830 [PubMed: 24446830]
4. Pfoertner T-K, Rathmann K, Elgar FJ, et al. Adolescents' psychological health complaints and the economic recession in late 2007: a multilevel study in 31 countries. *Eur J Public Health.* 2014 12;24(6):961–7. Epub 2014 May 23. 10.1093/eurpub/cku056 PMid:24860027 [PubMed: 24860027]
5. McInerney M, Mellor JM, Nicholas LH. Recession depression: mental health effects of the 2008 stock market crash. *J Health Econ.* 2013 12;32(6):1090–104. Epub 2013 Sep 13. 10.1016/j.jhealeco.2013.09.002 PMid:24113241 [PubMed: 24113241]
6. Burgard SA, Hawkins JM. Race/ethnicity, educational attainment, and foregone health care in the United States in the 2007–2009 recession. *Am J Public Health.* 2014 2;104(2):e134–40. Epub 2013 Dec 12. 10.2105/ajph.2013.301512 PMid:24328647 [PubMed: 24328647]
7. Downing J, Laraia B, Rodriguez H, et al. Beyond the Great Recession: was the foreclosure crisis harmful to the health of individuals with diabetes? *Am J Epidemiol.* 2017 3 15;185(6):429–35. 10.1093/aje/kww171 PMid:28184432 [PubMed: 28184432]

8. Seeman T, Thomas D, Merkin SS, et al. The Great Recession worsened blood pressure and blood glucose levels in American adults. *Proc Natl Acad Sci U S A*. 2018 3 27;115(13):3296–301. Epub 2018 Mar 12. 10.1073/pnas.1710502115 PMid:29531048 [PubMed: 29531048]
9. Seefeldt KS, Graham JD, Abner G. America's poor and the Great Recession. Bloomington, IN: Indiana University Press, 2013.
10. Mortensen K, Chen J. The great recession and racial and ethnic disparities in health services use. *JAMA Intern Med*. 2013 2 25;173(4):315–7. 10.1001/jamainternmed.2013.1414 PMid:23303245
11. Connolly V, Unwin N, Sherriff P et al. Diabetes prevalence and socioeconomic status: a population based study showing increased prevalence of type 2 diabetes mellitus in deprived areas. *J Epidemiol Community Health*. 2000 3;54(3):173–7. 10.1136/jech.54.3.173 PMid:10746110 [PubMed: 10746110]
12. Espelt A, Arriola L, Borrell C, et al. Socioeconomic position and type 2 diabetes mellitus in Europe 1999–2009: a panorama of inequalities. *Curr Diabetes Rev*. 2011 5;7(3):148–58. 10.2174/157339911795843131 PMid:21418003 [PubMed: 21418003]
13. Robbins JM, Vaccarino V, Zhang H, et al. Socioeconomic status and diagnosed diabetes incidence. *Diabetes Res Clin Pract*. 2005 6;68(3):230–6. 10.1016/j.diabres.2004.09.007 PMid:15936465 [PubMed: 15936465]
14. Gnani R, Karaghiosoff L, Costa G, et al. Socio-economic differences in the prevalence of diabetes in Italy: the population-based Turin study. *Nutr Metab Cardiovasc Dis*. 2008 12;18(10):678–82. Epub 2008 Apr 18. 10.1016/j.numecd.2007.11.004 PMid:18395428 [PubMed: 18395428]
15. Brown AF, Ettner SL, Piette J, et al. Socioeconomic position and health among persons with diabetes mellitus: a conceptual framework and review of the literature. *Epidemiology Rev*. 2004;26:63–77. 10.1093/epirev/mxh002 PMid:15234948
16. Stuff JE, Casey PH, Szeto KL, et al. Household food insecurity is associated with adult health status. *J Nutr*. 2004 9;134(9):2330–5. 10.1093/jn/134.9.2330 PMid:15333724 [PubMed: 15333724]
17. Hamelin AM, Habicht JP, Beaudry M. Food insecurity: consequences for the household and broader social implications. *J Nutr*. 1999 2;129(2S Suppl):525S–8S. 10.1093/jn/129.2.525S PMid:10064323 [PubMed: 10064323]
18. Montgomery J, Lu J, Ratliff S, et al. Food insecurity and depression among adults with diabetes: results from the National Health and Nutrition Examination Survey (NHANES). *Diabetes Educ*. 2017 6;43(3):260–71. Epub 2017 Apr 23. 10.1177/0145721717699890 PMid:28436293 [PubMed: 28436293]
19. Ohde S, Deshpande G, Yokomichi H, et al. HbA1c monitoring interval in patients on treatment for stable type 2 diabetes. A ten-year retrospective, open cohort study. *Diabetes Res Clin Pract*. 2018 1;135:166–71. Epub 2017 Nov 16. 10.1016/j.diabres.2017.11.013 PMid:29155151 [PubMed: 29155151]
20. Cefalu WT, ed. American Diabetes Association Standards of Medical Care in Diabetes—2016. *Diabetes Care*. 2016 1;39(Suppl 1):S1–2. [PubMed: 26696671]
21. Ahn S, Lee J, Bartlett-Prescott J, et al. Evaluation of a behavioral intervention with multiple components among low-income and uninsured adults with obesity and diabetes. *Am J Health Promot*. 2018 2;32(2):409–22. Epub 2017 Mar 9. 10.1177/0890117117696250 PMid:28279084 [PubMed: 28279084]
22. Adler A, Stratton I, Neil HA, et al. Association of systolic blood pressure with macro-vascular and microvascular complications of type 2 diabetes (UKPDS 36): prospective observational study. *BMJ*. 2000 8;321(7258):412–9. 10.1136/bmj.321.7258.412 PMid:10938049 [PubMed: 10938049]
23. Hansson L, Zanchetti A, Carruthers SG, et al. Effects of intensive blood-pressure lowering and low-dose aspirin in patients with hypertension: Principal results of the Hypertension Optimal Treatment (HOT) randomised trial. *Lancet*. 1998 6 13;351(9118):1755–62. 10.1016/S0140-6736(98)04311-6 [PubMed: 9635947]
24. Calman NS, Hauser D, Weiss L, et al. Becoming a patient-centered medical home: a 9-year transition for a network of Federally Qualified Health Centers. *Ann Fam Med*. 2013 5–Jun;11 Suppl 1:S68–73. 10.1370/afm.1547 PMid:23690389 [PubMed: 23690389]

25. Calman NS, Hauser D, Schussler L, et al. A risk-based intervention approach to eliminate diabetes health disparities. *Prim Health Care Res Dev*. 2018 9;19(5):518–22. Epub 2018 Feb 8. 10.1017/S1463423618000075 PMid:29415785 [PubMed: 29415785]
26. Pfeffer FT, Danziger S, Schoeni RF. Wealth disparities before and after the Great Recession. *Ann Am Acad Pol Soc Sci*. 2013 11;650(1):98–123. 10.1177/0002716213497452 PMid:25332508 [PubMed: 25332508]

Figure 1. Pre-recession through post-recession annual change.^a

Note:

*Statistically significant $p < .05$.

^aThe bars denote the mean change in levels compared with the previous year; therefore a value of zero indicates no change, bars below zero indicate declining levels (improved control), and bars above zero indicate increasing levels (worse control).

Table 1.**SAMPLE DEMOGRAPHICS BY BASELINE DIABETES RISK FACTORS**

	N	%	Average Pre-Recession SBP	Average Pre-Recession HbA1c	Average Pre-Recession BMI
Total	1,021	100.0	126.8	10.4	32.3
Gender					
Female	653	64.0	125.5 ^a	10.4	33.5 ^a
Male	368	36.0	129.0	10.5	30.1
Age					
Under 18	13	1.3	110.7 ^a	12.4 ^a	30.3 ^a
18–29	66	6.5	115.6	11.7	33.5
30–49	398	39.0	123.7	10.8	33.1
50–69	485	47.5	130.1	10.0	31.8
70+	59	5.8	136.1	10.0	30.2
Race/Ethnicity					
White	59	5.8	127.4 ^b	10.1	31.7
Black	323	31.6	128.3	10.4	32.6
Hispanic	527	51.6	125.5	10.5	32.6
Other	64	6.3	124.9	10.6	30.5
Missing	48	4.7			
Insurance					
Uninsured	33	3.2	125.9	10.6	35.0 ^b
Public	655	64.2	126.9	10.4	32.4
Private	268	26.2	125.4	10.5	31.8
Missing	65	6.4			
In a Relationship at Baseline					
No	408	40.0	127.0 ^b	10.4	33.0 ^a
Yes	260	25.5	128.2	10.4	31.2
Missing	353	34.6	125.4	10.6	32.3
Tobacco Use at baseline					
No	619	60.6	127.3	10.4	32.3
Yes	401	39.3	125.9	10.5	32.3
Missing	1	0.1			

Notes:

^aMaentel-Haenszel test for difference across subgroups was statistically significant at p<.01 level.^bMaentel-Haenszel test for difference across subgroups was statistically significant at p<.05 level.

Table 2.

AVERAGE ABSOLUTE CHANGE IN DIABETES RISK FACTORS PRE-, DURING, AND POST-RECESSION BY SOCIODEMOGRAPHIC FACTORS^a

	Pre-Recession to Recession Mean Difference			Recession to Post Recession Mean Difference		
	BP	HbA1c	BMI	BP	HbA1c	BMI
Total	.85 ^b	-.86 ^b	.27 ^b	.38	-.91 ^b	-.33 ^b
Gender						
Female	.98 ^b	-.88 ^b	.28 ^c	.67	-.93 ^b	-.45 ^b
Male	.62	-.82 ^b	.24 ^c	-.13	-.88 ^b	-.13
Age						
Under 18	4.93 ^b	-.33	1.63	4.33	-3.04 ^c	.23
18–29	2.74 ^b	-1.59 ^b	.70	3.16 ^b	-.77 ^b	-.37
30–49	.96 ^c	-.96 ^b	.39 ^b	1.41 ^b	-.95 ^b	-.24 ^c
50–69	.73	-.69 ^b	.17	-.54	-.87 ^b	-.43 ^b
70+	-1.57	-.83 ^b	-.53	-3.01 ^c	-.72 ^b	-.25
Race/Ethnicity						
White	1.67	-.39	-.41	-2.56	-.80 ^b	-.82 ^c
Black	1.02	-1.02 ^b	.27	1.10 ^c	-.81 ^b	-.30
Hispanic	.47	-.87 ^b	.40	.65	-1.01 ^b	-.36
Other	2.59	-.68	.06	-1.08	-.94 ^b	-.14
In a Relationship						
No	.26	-.82 ^b	.35 ^b	-.31	-.96 ^b	-.35 ^b
Yes	.55	-1.00 ^b	.33 ^c	.49	-.71 ^b	-.35 ^b
Missing	1.75 ^b	-.79 ^b	.13	1.14 ^c	-1.00 ^b	-.30 ^c
Insurance						
Uninsured	-1.04	-1.27 ^b	-.05	3.07	-.09	.21
Public	.72 ^b	-.92 ^b	.19	.45	-.92 ^b	-.38 ^b
Private	1.75 ^b	-.73	.45 ^b	.57	-1.00 ^b	-.26 ^c
Smoking History						
No	.81 ^b	-.79 ^b	.43 ^b	.28	-.91 ^b	-.38 ^b
Yes	.91	-.96 ^b	.01	.57	-.91 ^b	.26 ^c

Note:

^aThis table reports absolute change in mean levels; baseline mean levels were: SBP 126.8 mmHg, HbA1c 10.4%, BMI 32.3 kg/m² (see Table 1).

^bAdjusted comparison with previous year significant at p<0.01 level.

^c Adjusted comparison with previous year significant at $p < 0.05$ level.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript