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Robert P. Heaney, M.D.
Joan M. Lappe, Ph.D., R.N.

Emory University
Vin Tangpricha, M.D., Ph.D.

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Linus Pauling Institute
Adrian F. Gombart, Ph.D.

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A Consortium of Scientists, Institutions and Individuals Committed to Solving the Worldwide Vitamin D Deficiency Epidemic

INCIDENCE RATE OF TYPE 2 DIABETES IS >50% LOWER IN GRASSROOTSHEALTH COHORT WITH MEDIAN OF 22 NG/ML THAN IN NHANES COHORT WITH MEDIAN OF 22 NG/ML

Sharon L. McDonnell¹, Leo L. Baggerly¹, Christine B. French¹, Robert P. Heaney², Edward D. Gorham³, Michael F. Holick⁴, Robert Scragg⁵ and Cedric F. Garland³

Cross-sectional comparison study of participants aged 20+ years in two U.S. cohorts: GrassrootsHealth (GRH) (N=4,933) and 2005-2006 National Health and Nutrition Examination Survey (NHANES) (N=4,078)

Objectives

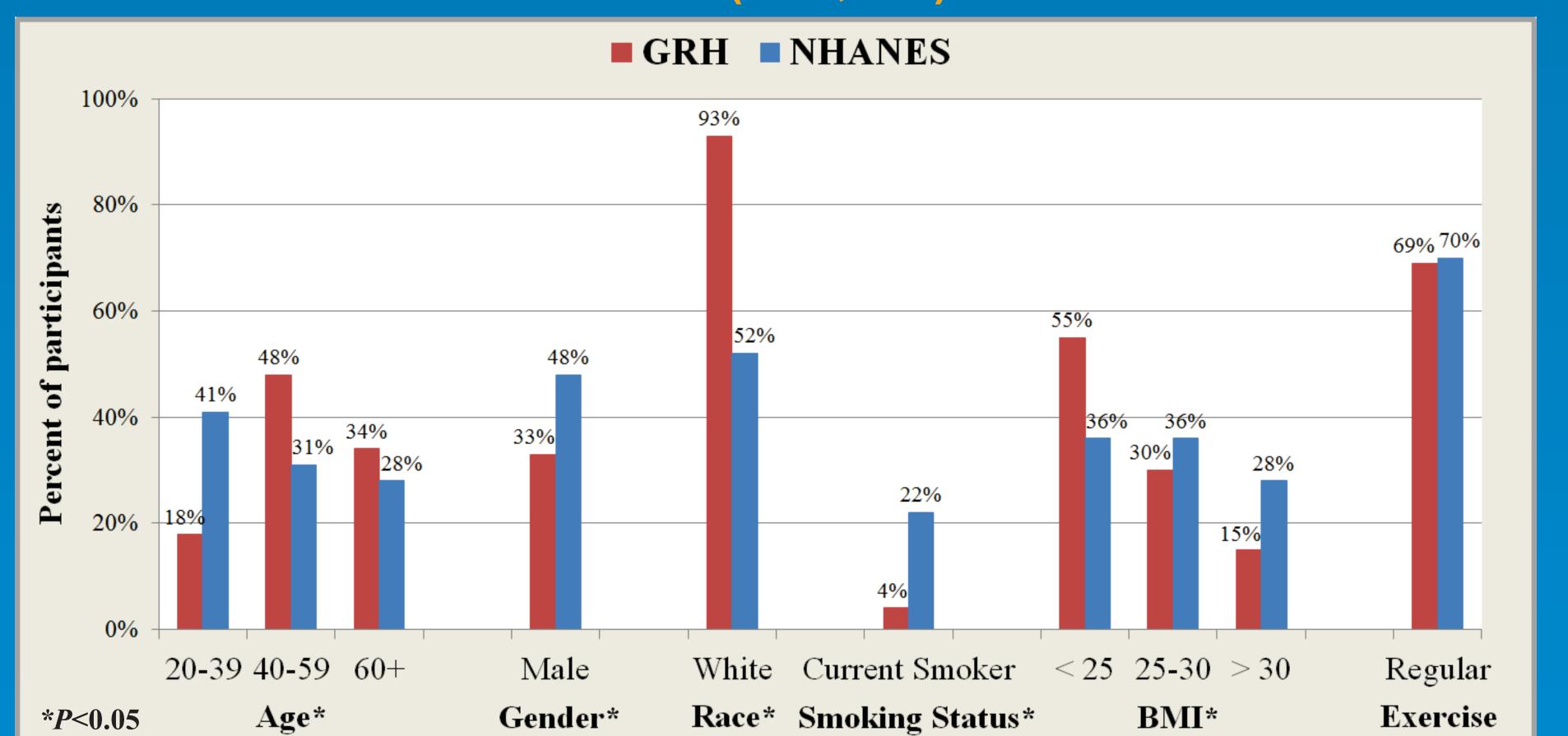
- Compare incidence rates of type 2 diabetes within each cohort.
- Examine relationship between serum 25(OH)D and incidence of type 2 diabetes.

Background

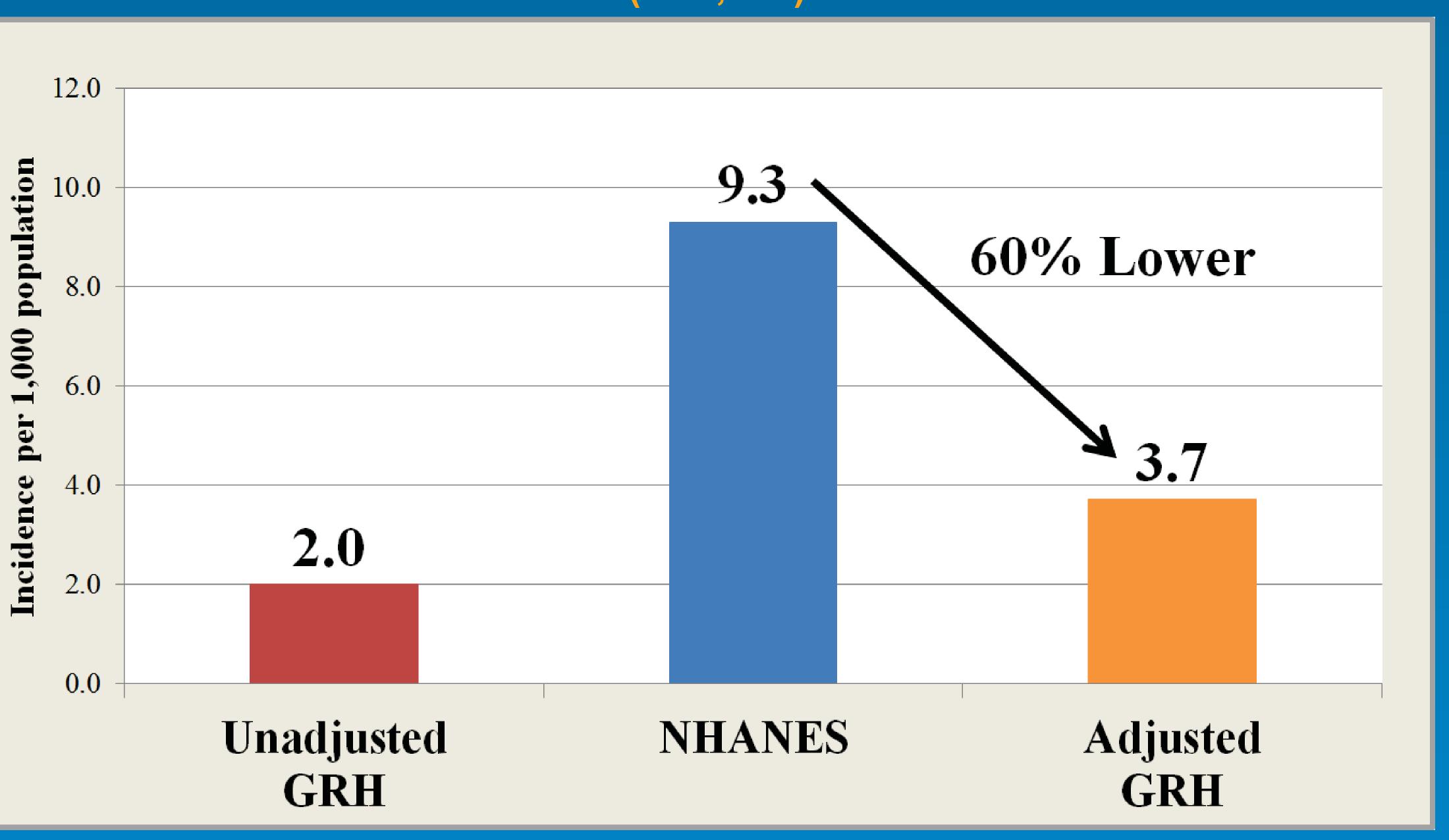
- 8.3% of the U.S. population have diabetes (25.8 million people); type 2 diabetes accounts for 90-95% of diabetes cases.
- Higher serum 25(OH)D concentrations have been associated with lower risk of type 2 diabetes.

Results

Demographic Characteristics of GrassrootsHealth (N=4,933) and NHANES (N=4,078) Cohorts



Type 2 Diabetes Incidence in GrassrootsHealth (N=4,933) and NHANES (N=4,078) Cohorts



- Median 25(OH)D concentration in GRH cohort was 41 ng/ml and in NHANES was 22 ng/ml (p<0.0001).
- After indirect adjustment for age, gender, race, BMI and smoking status, the standardized incidence ratio (SIR) was 0.40 (95% CI: 0.20-0.71).
- Using the Mantel-Haenszel method to adjust for age, the lowest 25(OH)D tertile had higher odds of developing diabetes than the highest tertile (GRH OR: 1.2, p=0.83; NHANES OR: 8.0, p=0.001).
- In the NHANES cohort, the lowest 25(OH)D tertiles (<17, 17-24 ng/ml) had higher odds of developing diabetes than the highest tertile (OR: 4.9, p=0.02 and 4.8, p=0.01 respectively), adjusting for age, race, BMI and exercise.

Conclusions

- Multiple-adjusted incidence rate of type 2 diabetes in a cohort with markedly higher than usual median serum 25(OH)D concentrations (GRH) was less than half that in a cohort with lower median 25(OH)D (NHANES).
- Raising serum 25(OH)D may be a useful tool for reducing risk of diabetes in the population.
- Differences in study design, demographics and methods may have limited comparability.

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