

## **Doctor's Orders and Magic Pills: How Much Do People with Health Problems Substitute Medication for a Healthier Lifestyle?**

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### **Abstract**

Over the past twenty-five years, the percent of Americans diagnosed with diabetes has nearly doubled. According to 2005 estimates from the Centers for Disease Control and Prevention, seven percent of the American population now has diabetes. Complications from diabetes include heart disease, stroke, high blood pressure, blindness, kidney disease, and amputations. In 2002, the estimated total direct and indirect costs of diabetes were 132 billion dollars. As diabetes is more likely to affect ethnic minorities and older adults, these statistics are likely to worsen as our population ages and becomes more diverse.

Although these statistics are discouraging, the negative effects of diabetes can be managed on an individual level through fairly straightforward behavioral changes such as eating a healthful diet and increasing physical activity. Economic theory predicts that individuals will choose to alter current behavior when the benefits of doing so outweigh the costs. Thus, depending on the alignment of prices, income, beliefs about how current lifestyle influences future health, and preferences, an individual may choose to remain sedentary, slightly overweight and eat too much of the wrong foods, knowing that such choices compromise health and longevity. Discovering a pre-existing medical condition like diabetes might tip the balance and compel this same person to choose a healthier diet and lifestyle. Adding the option of health-improving medication, such as insulin into this equation makes the direction of diet and lifestyle choices theoretically ambiguous. Availability of medication is likely to raise an individual's perceived health production function but also lower the health cost of returning to choices that may have precipitated the chronic condition.

The objective of this study is to estimate how differences in diet quality, physical activity, cigarette smoking, alcohol consumption and bodyweight correlate with whether or not an individual has been diagnosed with diabetes, and whether or not an individual uses medication to manage his or her health condition. Knowing if and how individuals choose to substitute medication for adopting a better diet or a healthier lifestyle provides insight into the welfare effects of changing access to prescribed medication and other proposed interventions to improve diet and health. Knowing how behaviors correlate with socio-economic characteristics also sheds light on ways to improve the efficacy of public health education.

Data for this analysis come from the National Health and Nutrition Examination Survey (NHANES 1999-2002). Each year 5,000 civilian, noninstitutionalized persons in the U.S receive a thorough medical examination, provide a 24-hour dietary recall, and answer questions related to physical activity, cigarette smoking, current health, and family medical history. We use data from the dietary recall to calculate how well each individual's diet conforms to the Diabetes Food Guide Pyramid (American Diabetes Association). We also use information about individuals' daily intake of fiber, added sugars, fat, usual level of physical activity, usual cigarette and alcohol consumption, and measured waist circumference. We then estimate how these variables correlate with whether or not an individual has diabetes or takes diabetes medication.

An individual's current health is influenced by his or her past dietary and behavioral choices. Thus, being prescribed medication for diabetes is largely endogenous. We use an instrumental variables (IV) estimator to produce unbiased estimates. As instruments, we use whether a respondent's parents had specific health problems and whether or not an individual has health insurance. These variables are exogenous, but should be highly correlated with whether or not an individual is encouraged to take medication.

Results from our IV estimates indicate that individuals' diets are quite resistant to change. Between diabetics who do not take medication and non-diabetic individuals, there are few differences in food or behavioral choices. The only significant difference is that diabetics are estimated to drink less alcohol than non-diabetics. On the other hand, diabetics who use medication to manage their health conditions consume significantly more starchy foods, more fat, more meat, and have a significantly higher waist circumferences. This study suggests that optimizing behavior with respect to food and behavioral choices while taking medication may lead to less healthy

diet choices. In fact, the impact of medication may be larger than the diet improvements that follow medical diagnosis of diabetes and the concomitant instructions to make diet and lifestyle changes.

One implication of this study is that information about how and why to change diet may not in itself be enough of an incentive to induce changes in diet and behavior. Instead, we find that people may be more responsive to changes in relative costs—reducing the negative consequences of unhealthy diet and behavioral choices through medication has a larger impact on choices than simply being aware of a serious health condition. It may also be that individuals misperceive the benefits of healthful changes relative to costs because they overestimate the efficacy of medication. If so, health care professionals could shift focus to educating diabetics on accurately assessing both the benefits and limitations of medication.

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Endnote

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