



# The role of physicians in promoting weight loss



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## ABSTRACT

There are numerous costs resulting from being overweight or obese. A relevant question is how to effectively reduce rates of obesity. I examine the effect of advice from a physician or health care provider to lose weight on individual weight outcomes using survey data. I account for selection bias using a control function approach and rely on data restrictions to control for simultaneity. I find robust results indicating that advice has a significant effect on weight loss. Several studies suggest physicians may not adequately advise their patients about weight loss. The results of this paper highlight an important opportunity for physicians to advise at-risk patients.

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Author: “I hardly have time to exercise these days.”

Author’s Physician: “Then you need to reprioritize your health.”

## 1. Introduction

Obesity is associated with numerous health problems (e.g. type-2 diabetes, hypertension and cardiovascular disease), resulting higher medical costs (Sturm, 2002; Finkelstein et al., 2003) and psychological stigma (Carr and Friedman, 2005; Puhl and Heuer, 2009; Carr and Jaffe, 2012). Being obese impacts labor force outcomes as well. For example, being obese lowers wages received by women (Cawley, 2004; Han et al., 2011; Sabia and Rees, 2012; Caliendo and Lee, 2013) and men (Lundborg et al., 2010). Obesity can also reduce the probability of employment as well (Han et al., 2009; Rooth, 2009; Wada and Tekin, 2010; Caliendo and Lee, 2013). Clearly, obesity

is not just a long-term societal issue but one that has immediate consequences for people, particularly in the labor market. An important question then is how to go about improving weight outcomes of overweight and obese people.

Market regulations such as advertising restrictions, bans on certain foods and excise taxes are often proposed to target factors thought to contribute to obesity. Such policy measures may not impact the intended audience, however, and can penalize others in society. A more personal and direct way to influence peoples’ weight outcomes, which may be overlooked, is through professional health care providers. In fact, several studies find that after receiving physician advice, people are more motivated to lose weight (Huang et al., 2004; Mehrotra et al., 2004; Kant and Miner, 2007) and are more likely to engage in weight-loss behavior (Kreuter et al., 2000; Greenlund et al., 2002; Loureiro and Nayga, 2006, 2007).

Several studies suggest, however, that physicians may provide insufficient information about weight loss and that practitioners may be missing opportunities to

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advise at-risk individuals to lose weight (Galuska et al., 1999; Sciamanna et al., 2000; Huang et al., 2004; Flocke et al., 2005). Bleich et al. (2011) found that most obese patients do not receive an obesity diagnosis or weight-related counseling and that overweight physicians are less likely to engage their patients in weight loss discussions. The authors suggest that preventive visits may provide a key opportunity for obese patients to receive weight-related counseling from their physician. To date, few papers have examined how professional healthcare advice to lose weight impacts weight outcomes.

In this paper, I use the Centers for Disease Control (CDC) 2009 Behavioral Risk Factor Surveillance System (BRFSS) survey to examine if advice from a physician or healthcare professional to lose weight has an impact on a person's weight outcome. In the survey, people with varying levels of arthritis report whether or not they received advice to lose weight as well as their weight change over the previous year. I compare weight change outcomes of people who received advice to lose weight and those that did not. The primary challenge with using a non-randomized treatment from a survey data set is that unobserved characteristics affect whether or not a person goes to a healthcare provider in the first place. Failing to account for this endogenous treatment can bias estimates of advice. To address this issue, I estimate a two-stage control function model. In the first stage, I estimate the probability of receiving advice and use this to adjust the second stage model of weight change.

Another problem is that the BRFSS data is cross-sectional. Therefore, I cannot assume that advice has a causal impact on weight loss because it is not clear which event occurs first. To account for this, I use a subsample of survey respondents who report visiting a physician more than a year ago. Since weight change is reported over the previous year, this increases the likelihood that advice was received prior to the weight change.

Following this, I also examine which mechanism (caloric consumption or caloric expenditure) is more likely to have facilitated weight change. Based on a person's reported consumption of fruit, fruit juices and vegetables, exercise habits and whether they smoke or drink alcohol, I estimate the probability of weight loss and weight gain. While these latter models only reflect correlations, they provide additional insight into ways to help target obesity.

Overall, the results of this paper highlight a potential opportunity for physicians to directly impact peoples' weight outcomes.

## 2. Motivation

### 2.1. Conceptual model

In Grossman's seminal paper (1972), he highlights two important factors that affect personal investments in health. First, every person derives value from their current and future health outcomes. Second, health is a depreciating good that requires periodic and costly investments to maintain. An important consideration, however, is that

most people cannot fully assess their health status, which includes their stock of health capital and the depreciation of their health capital. As such, it is likely to be difficult for any person to make optimal investments in their own health.

A problem for people is to obtain an accurate assessment of their health status so that they can make more informed investments in their health. One way to obtain a health assessment is to visit a physician or health care professional. A physician's evaluation can help improve a person's knowledge about their stock of health capital and the rate of depreciation of their health capital. This can provide a better approximation of a person's current and future health status, which can help a person to determine appropriate investments in their health. With respect to this paper, I expect that receiving advice regarding a specific health issue will make a person's health status more salient. This will lead to a person changing their investment in their health. As a result of these changes, I expect to observe a change in health status over a period of time.

Importantly, there are two types of people to consider: overconfident and underconfident. An overconfident person assesses their current health status to be better than what it actually is and an underconfident person assesses their current health status to be worse than it actually is. When the overconfident person learns of their *actual* health status, they are incentivized to increase their investment in their health. Likewise, upon learning of their actual health status, an underconfident person may *decrease* their investment in their health. As I am specifically examining the effect of advice to lose weight, I expect that the advice is being given to overconfident types. That is, people who are currently underinvesting in their health. Further, upon receiving this advice, I expect that such people will invest more in managing their weight which will ultimately lead to a reduction in their weight outcome.

### 2.2. Empirical evidence

A few studies have examined the impact of commercial weight loss programs on weight outcomes. Commercial weight loss programs are similar to receiving physician advice in that an expert provides weight management advice. Using randomized experiments Rock et al. (2007) and Jebb et al. (2011) demonstrate how commercial weight loss programs lead to significant weight loss. Jebb et al. (2011) also find that physician advice has a significant impact on weight loss, but the effect is less than the commercial program's effect. While randomized experiments provide a more controlled method to test treatments they may still have limitations. Deaton (2010) provides a detailed discussion of this issue in general. In this context, unobserved motivation to lose weight can bias the estimated treatment effect. In both Jebb et al. (2011) and Rock et al. (2007), participants were recruited to take part in the randomized experiment. Such recruitment may favor the inclusion of motivated participants into the sample. As such, their results may identify treatment effects on motivated people and may not be

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