



Social norms and financial incentives to promote employees' healthy food choices: A randomized controlled trial[☆]



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ABSTRACT

Objective. Population-level strategies to improve healthy food choices are needed for obesity prevention. We conducted a randomized controlled trial of 2672 employees at the Massachusetts General Hospital who were regular customers of the hospital cafeteria with all items labeled green (healthy), yellow (less healthy), or red (unhealthy) to determine if social norm (peer-comparison) feedback with or without financial incentives increased employees' healthy food choices.

Methods. Participants were randomized in 2012 to three arms: 1) monthly letter with social norm feedback about healthy food purchases, comparing employee to "all" and to "healthiest" customers (feedback-only); 2) monthly letter with social norm feedback plus small financial incentive for increasing green purchases (feedback-incentive); or 3) no contact (control). The main outcome was change in proportion of green-labeled purchases at the end of 3-month intervention. Post-hoc analyses examined linear trends.

Results. At baseline, the proportion of green-labeled purchases (50%) did not differ between arms. At the end of the 3-month intervention, the percentage increase in green-labeled purchases was larger in the feedback-incentive arm compared to control (2.2% vs. 0.1%, $P = 0.03$), but the two intervention arms were not different. The rate of increase in green-labeled purchases was higher in both feedback-only ($P = 0.04$) and feedback-incentive arms ($P = 0.004$) compared to control. At the end of a 3-month wash-out, there were no differences between control and intervention arms.

Conclusions. Social norms plus small financial incentives increased employees' healthy food choices over the short-term. Future research will be needed to assess the impact of this relatively low-cost intervention on employees' food choices and weight over the long-term.

Trial Registration: Clinical Trials.gov: NCT01604499.

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Introduction

Poor diet quality and increased energy intake are largely responsible for the rapid rise in obesity in the United States and worldwide (McCrary et al., 2002; Gortmaker et al., 2011). Preventing obesity at the population level will require widespread social, cultural, and environmental changes to promote consumption of healthy foods (Gortmaker et al., 2011; Swinburn and Egger, 2002; Swinburn et al.,

2011; Huang and Glass, 2008). Policy changes, such as calorie labeling and "junk food" taxes, have potential for improving population dietary choices (Block and Roberto, 2014; Mozaffarian et al., 2014). However, research evaluating the effectiveness of calorie labeling has been mixed (Harnack and French, 2008; Bassett et al., 2008; Elbel et al., 2009; Pulos and Leng, 2010; Finkelstein et al., 2011; Long et al., 2015), and taxation is still being actively debated in the United States (Mozaffarian et al., 2014). As policies evolve, new strategies to complement these approaches can be implemented by employers, institutions, and retailers to promote healthier food choices (Gortmaker et al., 2011; Swinburn and Egger, 2002; Yach and Calitz, 2014; Gardner et al., 2014).

Behavioral economists and psychologists have identified decision biases that contribute to unhealthy choices, including doing what is usual (status quo), placing disproportionate weight on the present and not considering the future (present-biased preferences), and being influenced by what others are doing (social norms) (Loewenstein et al., 2007; Thaler and Sunstein, 2009; Miles and Scaife, 2003; Schultz et al.,

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2007). Field research has demonstrated that interventions to address status quo bias and present-biased preferences, including altering the food environment and providing simple messages (e.g. traffic lights), increase healthy food choices (Thorndike et al., 2012; Levy et al., 2012; Thorndike et al., 2014; Hanks et al., 2013; Skov et al., 2013; Sonnenberg et al., 2013). Evidence from small experimental studies has shown that providing individuals with information about social norms influences the choice or quantity of food eaten (Roth et al., 2001; Pliner and Mann, 2004; Mollen et al., 2013; Prinsen et al., 2013; Robinson et al., 2013, 2014a, 2014b).

A social norm intervention has not yet been tested on a large scale to change food choices, but this strategy is already used to promote environmental energy conservation. The “Home Energy Report” is mailed to customers of utility companies and compares a household’s energy use to that of similar neighbors and to “energy-efficient” neighbors (Opower, n.d.). A natural field experiment of 600,000 treatment and control households demonstrated that this program significantly reduced energy consumption (Allcott, 2011). Financial incentives, another strategy to address decision biases, have been shown to improve several healthy behaviors (Higgins et al., 2000; Volpp et al., 2008, 2009; Finkelstein et al., 2008; Mitchell et al., 2013). There is evidence that changing the price of foods, e.g. decreasing the cost of healthy foods, or offering “cash back” or rebate programs in grocery stores increases the purchase of healthy foods (French et al., 1997, 2001; Block et al., 2010; Michels et al., 2008; Epstein et al., 2012; Bartlett et al., 2013; Sturm et al., 2013). The “Food Dudes” program demonstrated the effectiveness of using incentives as part of a multicomponent intervention to increase fruit and vegetable consumption among school-aged children (Morrill et al., 2015).

We hypothesized that a population of employees who were provided with social norm feedback about their healthy food choices compared to their peers would increase healthy foods purchased in a large worksite cafeteria and that adding a small financial incentive to the social norm feedback would further increase healthy purchases. Building on an established traffic-light food labeling system (Thorndike et al., 2012; Thorndike et al., 2014), we conducted a three-arm randomized trial comparing 1) social norm feedback about healthy cafeteria purchases; 2) social norm feedback plus small financial incentives to increase healthy food purchases; and 3) no feedback or incentives (control) over three months, followed by a three month wash-out period.

Methods

This study was approved by the Partners Healthcare Institutional Review Board on May 18, 2012.

Setting and participants

Massachusetts General Hospital is a 907 bed teaching hospital with over 24,000 employees. The hospital’s main cafeteria serves approximately 6500 hospital employees, patients, and visitors every day of the week between 6:30 am and 8:00 pm. The cafeteria is owned and operated by the hospital, and no outside food vendors are located on the campus. Hospital employees have the option of paying for cafeteria purchases by direct payroll deduction using a “platinum plate” card. In 2012, approximately 7400 employees used a platinum plate card to pay for cafeteria purchases.

In 2010, all food and beverages in the cafeteria were labeled with a traffic-light scheme, and results from this intervention have been previously reported (Thorndike et al., 2012, 2014; Levy et al., 2012; Sonnenberg et al., 2013). Briefly, the traffic-light system was based on the United States Department of Agriculture dietary guidelines (United States Department of Agriculture, n.d.; U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2010), and every item in the cafeteria was labeled as green, yellow, or red based on positive criteria (fruit/vegetable, whole grain, and lean protein/low-fat dairy as the main ingredient) and negative criteria (saturated fat and calories) (Thorndike et al., 2012). The introduction of the traffic-light system in the cafeteria included permanent signage to explain and display the labels.

Recruitment and randomization

Employees who used their platinum plate card for a minimum of three separate transactions per month in the main cafeteria during both July and August 2012 were eligible for participation in the study. On September 1, 2012, an “opt out” letter was mailed to these employees’ home addresses and briefly described the study procedures. A phone number and a study identification number were provided, and the employee could opt out of the study by calling the number and referencing the study identification number. Employees were informed in the letter that if they did not call within the next two weeks, they would automatically be enrolled. Employees were excluded from the study if the letter was returned due to an incorrect address. Three weeks after the letters were mailed, all employees who did not opt out or were not excluded due to an incorrect address were randomly assigned to one of three arms: 1) feedback-only; 2) feedback-incentive; or 3) control, using simple randomization executed in Microsoft Excel (Redmond, WA).

Intervention

Feedback-only

The feedback-only arm received four letters over three months. Letters were mailed at the beginning of the month for October, November, and December 2012 and January 2013. Each letter presented a 3-column color bar graph describing: 1) the proportion of the employee’s cafeteria purchases from the prior month that were labeled red, yellow, and green; 2) the average proportion of red, yellow, and green purchases by all employees using platinum plate cards; and 3) the average proportion of purchases labeled red, yellow, and green among the “healthiest MGH eaters” (top quintile in percentage of green purchases). The letter also included a written description of the employee’s percentage of green (or healthy) items compared to the “healthiest eaters.” Each letter also included an explanation of the traffic-light labeling system. The January 1st letter informed the participant that he or she would not receive any further communication.

Feedback-incentive

Letters mailed to the feedback-incentive arm included the same information as the feedback-only arm, but these letters also included a statement that the employee could earn a reward by achieving a specific “green goal” in the following month. There were three possible goals: make 40%, 60%, or 80% of all cafeteria purchases in the month green-labeled items. An individual’s goal was determined based on the proportion of green items purchased in the prior month (e.g., purchasing 8 green items and 24 yellow/red items in one month would mean 8/32 or 25% green).

If an individual’s baseline green purchases were less than 40%, the first goal was 40%; if baseline purchases were between 40% and 59%, the first goal was 60%; and if baseline purchases were between 60–79%, the first goal was 80%. An employee could earn \$10 toward his or her cafeteria account each time a threshold was passed, but he or she could only earn the incentive once for passing each threshold. If an employee increased past a threshold one month but then fell below the threshold in the next month, he or she would not earn any money for passing the same threshold again. However, if an employee passed a threshold once in one month and maintained above that threshold in the following month but did not pass the next threshold, the employee would earn \$5. Employees who started above the top threshold of 80% green could earn \$5 a month for maintaining at or above this level. The incentive system was designed so that employees who purchased the lowest proportion of green foods at the beginning of the study (less than 40% green) had the opportunity to earn the most reward money over the three months (\$30 if all three thresholds were achieved). An employee was notified in the monthly letter that he or she had earned a reward, and the credit toward the platinum plate account was included as a line item in the weekly or monthly paycheck. The January 1st letter provided a summary of the total rewards earned by the participant during the study and informed the participant that he or she would not receive any more rewards or communication.

Control arm

After the initial opt out letter, the control arm did not receive any further contact about the research study.

Outcomes

Data on employee age, sex, job type, and self-reported race/ethnicity (White, Black, Asian, or Latino) were available from Human Resources files.

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