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Brief Original Report

Weighing frequency among working adults: Cross-sectional analysis of two community samples

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ABSTRACT

Objective. Self-weighing frequency is associated with lower body weight and less weight gain. This study describes self-weighing frequency in two samples of working adults from different fields: office-based and transit employees.

Methods. Self-weighing frequency and demographic information were self-reported at baseline measurement of two worksite interventions. Data were collected from transit employees (n = 1479) enrolled in a worksite intervention between October and December of 2005 and office based employees (n = 1747) in another worksite intervention between January 2006 and April 2007 in the Minneapolis, MN and St. Paul, MN metropolitan area. Trained staff measured height and weight. Multinomial logistic regression models examined associations between self-weighing frequency and body mass index, study sample, and gender adjusting for age, race, and education.

Results. Odds ratios showed self-weighing frequency was significantly different between overweight and obese categories and between study samples. Office-based employees self-weighed more frequently than transit employees. Overweight employees self-weighed more frequently than obese employees.

Conclusion. While self-weighing outcomes and associations with obesity prevention and weight loss are still under investigation, these results may help in improving obesity intervention planning and informing worksite weight management programs by identifying how often working adults naturally engage in this behavior prior to weight loss interventions.

Introduction

An estimated 28% of the U.S. working population is obese (Luckhaupt et al., 2014). Obesity is linked to many chronic diseases and mortality (Flegal et al., 2013; Kaur, 2014). Further, because the health of working adults affects productivity, strategies to reverse this trend have important economic and public health benefits (Colditz, 1992).

Self-weighing is associated with lower body mass index (BMI) and less weight gain in adults (Linde et al., 2005, 2007; Steinberg et al., 2014; VanWormer et al., 2008). Much of the research that examines the impact of self-weighing on weight has focused on women and overweight or obese participants in weight loss trials, or those in the National Weight Control Registry (Ogden and Whyman, 1997; Levitsky et al., 2006; Butryn et al., 2007).

Recently, two different worksite weight gain prevention interventions assessed self-weighing; one conducted with transit employees and one with office-based employees (French et al., 2010; Linde et al., 2012). Although these populations differ in their required daily activities as well as working environments, both groups have high obesity prevalence (Luckhaupt et al., 2014; Linde et al., 2012; French et al., 2010). The present study examined baseline data from these studies and analyzed associations between self-weighing prevalence, BMI, occupational group, and demographics. As interest in self-weighing increases as a potential tool for weight loss and maintenance, this study serves to update and describe self-weighing frequency in a more representative sample of the working population. Further, given the growing interest in the potential for worksite weight loss programs to address disparities surrounding obesity, this research offers insight for effective intervention development (Cairnes et al., 2014).

Methods

Baseline measures from two group randomized weight-control intervention trials (HealthWorks and Route H) conducted at worksites in the Minneapolis–St. Paul, MN area were combined and analyzed. Both studies were designed to examine the effects of worksite dietary, physical activity, and weight monitoring environmental improvements

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on weight change over two years. Details about the interventions and findings are published elsewhere (Linde et al., 2012; French et al., 2010).

The HealthWorks study recruited six office-based worksites with a total of 1747 employees participating (72% of eligible employees). This population was 63% female, had a mean BMI of 28.5 ± 6.3 kg/m^2 and a mean age of 42 years (Linde et al., 2012).

Route H was conducted at four metropolitan transportation (bus) garages. Participants included bus drivers, mechanics, and managers. Staff collected baseline data from 1479 participants (78% of eligible employees). Participants were 21% female, had a mean BMI of 32.3 ± 7.4 kg/m^2 and a mean age of 47 years (French et al., 2010). Trained research staff measured height and weight of participants in both studies.

Statistical analysis

Baseline survey data from both studies were merged into a single dataset using SAS version 9.1.3. (Cary, NC, USA). Common variables were matched and renamed and the resulting dataset had one set of variables. A study sample variable was used to analyze characteristics by study. Participants with missing data for gender, BMI, age, race, education or self-weighing were excluded (15%, n = 494).

Self-weighing frequency was the primary outcome and assessed via the question, "How often do you weigh yourself?" Greater than daily frequency was collapsed into one category with daily frequency due to low response (n = 8). Responses of weekly and monthly were coded separately; bimonthly and never were combined to more closely match previous studies (Linde et al., 2007; VanWormer et al., 2011).

Logistic multinomial regression (PROC LOGISTIC) in SAS version 9.3 (Cary, NC, USA) was used to examine predictors of self-weighing frequency. Data from 2732 total participants were analyzed. The final model included gender, study sample, education (some college vs. less), age, race (white non-Hispanic vs. other) and BMI as predictors. BMI was transformed into three categories: normal (BMI < 25), overweight (BMI = 25 to <30), and obese (BMI ≥ 30). Interactions between study cohort and gender and study cohort and BMI were tested and found nonsignificant (data not shown).

Results

In the combined sample, 49% of employees reported self-weighing less than monthly, 16% monthly, 24% weekly, and 11% daily. In the final model, study sample and BMI category were significant predictors of self-weighing, as were education, and race (see Table 1).

The model suggests that those who were overweight had 57% higher odds of self-weighing daily and 14% higher odds of self-weighing weekly ($p < 0.01$ and $p = 0.02$ respectively) than those who were obese. Those in the normal weight category did not self-weigh more or less often than those in other categories.

Furthermore, HealthWorks participants had 89% higher odds of self-weighing daily and 28% higher odds of weighing weekly compared to Route H participants ($p < 0.001$ and $p = 0.05$ respectively). Finally, those with at least some college were likely to weigh more frequently than those with less, while White non-Hispanic individuals were more likely to self-weigh more often than other race/ethnic backgrounds.

Discussion

This study examined self-weighing behaviors of working adults independent of weight loss intervention in two demographically different working populations. Although the mean BMI in both study samples was above the normal range, office workers in HealthWorks had an average BMI in the overweight range while Route H employees had an average BMI in the obese range. Further, the Route H sample had a larger percentage of male participants and was older than the HealthWorks sample.

Our results show that self-weighing was more frequent in the office-based employees compared to transit workers even after adjusting for confounders, suggesting other factors that may influence self-weighing besides demographics. This result, along with the finding that overweight individuals self-weighed more often than obese individuals, suggests potential opportunities for interventions to encourage self-weighing among working adults. Indeed, at the conclusion of the HealthWorks trial, researchers found that obese individuals who self-weighed daily had the most weight loss success (VanWormer et al., 2011). In this combined sample, 51% indicated self-weighing once a month or more, which suggests that many people are already practicing this behavior, and thus encouraging more frequent self-weighing may be a feasible intervention strategy.

Interestingly, after adjustment, there was no self-weighing difference by gender, suggesting that men and women are practicing this behavior at comparable rates. Therefore, men should not be overlooked when considering the potential risks and benefits of self-weighing.

Table 1
Multinomial logistic regression model showing the association between self-weighing frequency and BMI category, study cohort, and gender adjusted for age, race and education.

n = 2732			
Predictors:	Self-weighing frequency		
	Daily	Weekly	Monthly
	OR (95% CI)	OR (95% CI)	OR (95% CI)
BMI category			
Normal	1.22 (0.87; 1.72)	0.81 (0.63; 1.05)	0.80 (0.60; 1.08)
Overweight	1.57 (1.16; 2.12)	1.14 (0.92; 1.42)	0.83 (0.64; 1.07)
Obese (ref)	1.00	1.00	1.00
Study cohort			
HealthWorks	1.89 (1.34; 2.67)	1.28 (1.01; 1.63)	0.95 (0.72; 1.25)
Route H (ref)	1.00	1.00	1.00
Gender			
Female	1.23 (0.93; 1.63)	1.21 (0.98; 1.49)	0.89 (0.69; 1.13)
Male (ref)	1.00	1.00	1.00
Age	1.01 (1.00; 1.03)	1.01 (1.00; 1.02)	1.00 (0.99; 1.01)
Race			
Other	0.49 (0.33; 0.73)	0.52 (0.40; 0.68)	1.00 (0.77; 1.01)
White non-Hispanic (ref)	1.00	1.00	1.00
Education			
Less than 1 year of college	0.75 (0.55; 1.02)	0.80 (0.64; 1.00)	0.74 (0.58; 0.96)
1 + years of college (ref)	1.00	1.00	1.00

December–October 2005 and January 2006–April 2007, Minneapolis, MN and Saint Paul, MN, USA.

This study was limited by the merged dataset, in which only variables common to both studies were captured. Socio-economic data were restricted due to availability of income data for only one study. Additionally, these data were cross-sectional rather than longitudinal: only baseline data were extracted due to differences in study design and follow-up. Finally, it may be prudent to examine other social and environmental factors that affect self-weighing frequency of working adults besides demographics alone. Considering more current data may also be useful to assess changes of population trends in self-weighing.

Conclusion

Research that examines how often community samples self-weigh, such as reported here, is useful in informing intervention design to improve opportunities to curb obesity. Although more research is needed concerning the effects of self-weighing and weight loss at population levels, these findings help clarify the picture around self-weighing by adding to the evidence describing how often non-treatment seeking working adults engage in this behavior.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

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