Telephone health coaching and employee absenteeism: Does it impact absence due to illness in BMI-defined obese employees?

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Abstract

Obesity has an impact on communities and society as a whole. Adults who are overweight or obese are more likely to have chronic illnesses (Norman et al., 2009) compared to non-overweight/obese counterparts. Working adults contribute greatly to the welfare of the communities they live in (environmentally, economically) and thus the health and wellness of employees have a direct effect on the health of their community. A relatively new strategy that aims to support working adults to better manage their health are workplace wellness programs that may include on-site gyms, health workshops, fitness center discounts, a health allowance account, and other work based incentives intended to target employees that are most at risk for chronic illness and absenteeism related to chronic illness. This meta-analysis examines the use of telephone coaching (“telephone health coaching”) as a means of reducing chronic illness related absenteeism in employees who are overweight or obese.

The Patient population, Intervention, Comparison, Outcome (PICO) format was used to provide a clear focus for the literature review. A selection algorithm was used to systematically select appropriate studies for inclusion in the analysis. Over 1500 studies were selected initially for review and suitability. An analysis of each study included the quality and/or rigour of study design, study validity, participant characteristics, recruitment methods, interventions, and study results. Not all components of the analysis are shared in this article.

Twenty-four studies were selected for review. These studies focused on obesity, chronic illness, workplace health, the cost of absenteeism, and workplace interventions. Many employees who are obese, as defined by the body mass index (BMI), suffer from major chronic conditions including diabetes, musculoskeletal injury, and heart disease (Capodaglio et al., 2010). Furthermore, there is strong evidence that obese employees are sick more often than their non-obese counterparts (Neovius et al., 2008). There is evidence that telephone health coaching has produced minimal to moderate weight loss (0.04 lbs – 7.5 lbs) over an average period of 8 months (Van Wormer et al., 2009) with moderate levels of attrition (36% at 12 months) (Merill et al., 2010).

Overall, results are encouraging. Five out of six telephone health coaching programs examined indicated that telephone coaching interventions produced weight loss and/or reduction in BMI in overweight or obese employees over a short term period. Health care organizations in particular are in a unique position to take advantage of telephone health coaching as their employee populations are more prone to high levels of stress, poor eating, and activity habits leading to obesity (Han, Trinkoff, Storr & Geiger-Brown, 2011). In fact, Han et al. (2011) discovered that 27.1% (n=2103 nurses) of nurses in their study were obese. Telephone health coaching is fairly easy to implement and can be applied in a number of work settings. There is moderate evidence to support the use of a telephone health coaching intervention as a short term means of reducing chronic illness related absenteeism in employees who are overweight or obese.
Introduction

According to the World Health Organization (WHO) global rates of adult obesity have “more than doubled since 1980” (WHO, 2012). WHO uses the Body Mass Index (BMI) to define and classify overweight and obese individuals (WHO, 2012). An individual with a BMI of 25 or more is considered to be overweight. An individual with a BMI of 30 or more is considered obese (WHO, 2012). In Canada the number of BMI-defined obese men and women increased by more than 8% among women aged 20-39 and men 60-74 between 2007 and 2009 (Giovanna & Hellas, 2013). This increased obesity has an impact on the collective health of communities because a high BMI is associated with a number of chronic conditions including hypertension, diabetes, and depression (Capodaglio et al., 2010).

As organizations learn more about the impact of employee health as it relates to absence due to illness, there is an increased demand for innovative, cost effective methods of managing employee health (Heinen & Darling, 2010). In the last 5 years, workplace health promotion programs have become more commonplace (Heinen & Darling, 2009) but research shows that many programs fail to make a significant impact on employer costs (WHO, 2010). In their systematic review of 47 worksite health studies, Anderson et al. (2009) revealed that weight reduction in overweight and obese employee populations and health intervention research evidence is somewhat inconclusive. Aggregate data showed that worksite health promotion programs had a positive effect on BMI and provided a modest reduction in weight (VanWormer et al., 2009) but researchers were unable to confirm which employee group (overweight or obese) benefited most from the weight reduction/improved nutrition intervention.

Considering that obesity is a preventable (WHO, 2012) yet potentially devastating condition, every effort should be made to assist employees to adopt healthier behaviours that will improve personal health, increase workability, and curb the epidemic rate of obesity (WHO, 2012). Obese adults are more likely to be hospitalized, use emergency services, and are at higher risk for obesity-related mortality (Prospective Studies Collaboration, 2009). Obese employees are less able to contribute to the work force compared to their non-obese counterparts (Neovius, Johansson, Kark & Neovius, 2008). According to Merrill, Bowden & Aldana (2010) telephone health coaching is a practical, cost effective, and time conserving method of providing support to obese employees managing or at risk for developing chronic health conditions, musculoskeletal disorders, and mild to moderate physical disabilities.

The goal of this systematic review is to analyze current research focused on the relationship between telephone health coaching, BMI reduction, and the reduction of chronic illness-related absence in obese employees.

Literature Review Methods

To focus the research topic on BMI-defined obesity among employees, the Patient population, Intervention, Comparison, Outcome (PICO) (McLellan, 2010) method was used. The PICO summary was applied as follows:

P – Patient population: Full or part-time obese employees
I – Intervention: Telephone health coaching as it relates to health promotion and weight management
C – Comparison: Face-to-face health behaviour modification therapy
O – Outcome: Reduced BMI, improved health, reduced absence due to illness

The Medline, PubMed, CINAHL, and Google Scholar were databases used to find research literature that focused on telephone health management of BMI-defined obese employees.
A total of 3508 published studies were found using search words and key terms (see Appendix A for details). Abstracts and study titles from search results were reviewed for relevance and age. Exclusion criteria included: 1) Studies more than 5 years old; 2) Studies that did not specifically address the issue of employee obesity, employee disease management, health coaching for obese adults, costs associated with employee obesity, absence due to illness in relation to obesity, chronic illness in employee populations or telephone health coaching for employee populations; and 3) Studies that were not the subject of a clinical trial, meta-analysis.

Inclusion criteria included: 1) Studies that examined the link between employee obesity and absence due to sickness; 2) Studies that had the primary goal of reducing weight and/or BMI; 3) Research that presented health coaching or telephone coaching as the primary intervention; 4) Research outcomes that indicated there was an impact on study participants (overweight and obese employees).

The twenty-four retrieved studies that met the preceding criteria were reviewed in their entirety and screened according to the algorithm outlined in Figure 1 (below).

**Figure 1: Study Selection Algorithm**
### Table 1: Summary of Search Results for Telephone Health Coaching and Employee Absenteeism

<table>
<thead>
<tr>
<th>Databases Searched</th>
<th>Key Words</th>
<th>Search terms</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed</td>
<td>Obese, employees, health, chronic, obesity</td>
<td>Employee obesity and exercise (231); employee obesity and BMI (337); chronic illness in obese employees (24); telephone based coaching (19); telephone based health coaching (16)</td>
<td>Studies &gt; 5 years old; adults under 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
<tr>
<td>Ovid Medline</td>
<td>Adult, BMI, Weight, loss, reducing</td>
<td>Weight loss and obese employees (0); obese employees (26); health coaching (0)</td>
<td>Studies &gt; 5 years old; adults over 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
<tr>
<td>Google Scholar</td>
<td>Telephone health coaching, employee, obesity, Canadian, chronic, cancer, disease</td>
<td>BMI-defined employee obesity (135), telephone health coaching for obese adults (6); chronic illness-related absenteeism in Canadian employees (95); telephone health coaching (257); adult obesity chronic kidney disease employees (538)<em>; adult obesity chronic heart disease, employees (1,550)</em></td>
<td>Studies &gt; 5 years old; adults under 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
<tr>
<td>CINAHL</td>
<td>Illness, chronic, employee, disease, disabled, obesity</td>
<td>Chronic illness and employee disability (48); employee disease management (117)</td>
<td>Studies &gt; 5 years old; adults under 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
<tr>
<td>Pro Quest Nursing &amp; Allied Health Resources</td>
<td>Telephone, coaching, exercise, obese</td>
<td>Telephone based diet and exercise (24); telephone interventions for obese employees (83)</td>
<td>Studies &gt; 5 years old; adults under 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
<tr>
<td>Research Study Reference Lists</td>
<td>Obese, employees, disease, management</td>
<td>Obese employees and absence due to illness (8); telephone health coaching and obesity (6)</td>
<td>Studies &gt; 5 years old; adults under 18 years old; corrected or retracted articles; non-English studies</td>
</tr>
</tbody>
</table>

**Assessing the Quality of Studies**

Studies were reviewed and critically appraised according to the McMaster University quantitative studies critical review form (Law, Stewart, Pollock, Letts, Bosch & Westmorland, 1998), the qualitative studies critical review form (Letts, Wilkins, Law, Stewart, Bosch & Wesmorland, 2007), and the Journal of the American Medical Association’s critical review form for systematic reviews (1994). Studies were considered of high quality and value if detailed, logical, and supported information was available in most or all categories of the critical review.
Findings

Results from the analysis of 24 studies are described in detail. Studies were categorized into one of five main topic areas: obesity and chronic illness, obesity and absence due to sickness, the cost of absence due to sickness, successful workplace strategies, and telephone health coaching. Key elements of the Law et al. (1998) and Letts et al. (2007) critical review forms were used as subcategories of this analysis.

Obesity and Chronic Illness

Five out of 24 studies focused on the relationship between obesity and chronic illness. The specific goals of each study varied but all studies aimed to evaluate or investigate the relationship between obesity and terminal chronic diseases. Two out of the 5 studies investigated the association between obesity and heart disease (Brehm et al., 2007; Stritzke et al. 2009); 2 studies assessed the association between obesity and endocrine-related illness (Jenum et al., 2012; Kim, Chun & Kwon, 2010). One study examined the link between obesity and pre-menopausal cancer risk (John et al., 2010).

All 5 studies provided background information and literature that supported the justification for the study. Jenum et al. (2012) provided the only in-depth presentation of facts that contributed to a strong justification for the investigation of “diabetes susceptibility” in ethnic minority populations. A formal literature review was not included in any of the 5 studies in this group.

The studies varied in size. The smallest study (Brehm et al., 2007) had 341 subjects while the study by Kim, Chun & Kwon (2010) utilized 1338 men and women. Two studies used a cross sectional design, 1 used a prospective cohort design, and John et al. (2011) used a population-based case control study design which examined a total of 1548 subjects.

Three out of 5 studies included race/ethnic characteristics of subjects. All of the participants in the study by Kim et al. (2011) were Korean. John et al. (2011) included a mean of 44% non-Hispanic White case participants and 50% non-Hispanic White participants in the control group. Stritzke et al. (2009) did not include ethnicity in their participant profile data.

The mean age range of study participants in 4 out of 5 studies was between 43 and 48 years. Sixty-nine percent of male and 50% of female participants in the Kim et al. (2011) study were over 60 years of age. This study focused primarily on chronic illness in elderly Koreans. Thirty-three percent of the study subjects accounted for obese participants (BMI ± 25kg/m² but less than 30kg/m²) in three studies that reported obesity in terms of a percentage. The mean BMI was 25kg/m² (reported in two studies).

Four out of 5 of the studies described inclusion and exclusion criteria. Two studies excluded either male or female data. Jenum et al. (2011) was the only study that described accommodations for non-English speaking subjects.

Stritzke et al. (2011) was the only cohort study in this group. Researchers used baseline data from two previous surveys to develop a 10 year follow up echocardiograph investigation with survey participants. The description of data collection procedures in 4 studies in this group was fair. A persistent and problematic issue was the lack of detail concerning the role and qualifications of data collection personnel in addition to a lack of information about the relationship between data collectors and study subjects. None of the studies reported a conflict of interest.

Data analysis in 4 of 5 studies consistently used the Pearson’s Chi-squared test to detect differences between groups. Odds ratios and a 95% confidence interval (CI) were consistently used in 4 out of 5
studies to examine the relationship between obesity and other health issues. Odds ratios were adjusted for age in 3 out of 5 studies. All studies provided information about the statistical significance of data. Jenum et al. (2012) established a statistically significant level of 0.05 to detect differences between ethnic groups. John et al. (2011) used the Wald statistic P value to distinguish odds ratios between pre-menopausal case groups (p values <0.05 were considered statistically significant). Study results indicated that women of color (in this case Hispanic and African American women) who are pre-menopausal have an increased risk of oestrogen receptor positive (ER+) and progesterone receptor positive (PR+) breast cancer if they are overweight, obese or continue to gain weight. Stritzke et al. (2009) used $p < 0.001$ to establish statistically significant differences and concluded that “obesity was the strongest risk factor for incidents of left atrial enlargement (LAE) studied” (p. 1986).

In summary, studies exploring obesity and chronic illness indicated that obesity has an impact on the development of chronic illness including heart disease, cancer, and diabetes. Some studies showed a positive correlation between increased BMI and increased risk of specific chronic conditions.

**Obesity and Employee Absence due to Illness**

There were 4 studies (1 systematic review, 2 cross sectional studies, and 1 research report) that focused on the relationship between obesity and absence due to illness. Overall, the goal of the articles was to evaluate the impact of obesity on absence due to illness, particularly, the effect obesity has on an individual’s ability to work. All articles confirmed the correlation between increased BMI and increased use of absence due to illness days.

Two out of 4 studies provided a formal literature review, 1 study used a few brief citations in its introduction and background supportive literature, and the study by Capodaglio et al. (2010) provided a very in-depth background summary; citing over 20 sources of research that highlighted the issue of lost working days, employer costs, obesity prevalence, and premature job leave. Justification of the need for the studies was clear and logical.

Inclusion and exclusion criteria were detailed in 2 of the studies. Harvey et al. (2010) used anonymous employee data collected between April 2005 and March 2007. Employees who did not have their height, weight or BMI measured during this time frame were excluded from the study. Employees aged 36-45 made up 42% of the entire sample population. The mean BMI of study participants was 29.5 kg/m². The research report by Capodaglio et al. (2010) provided some information about age, BMI, and health status but due to the nature of the article participant characteristics could not be examined. Alavinia et al. (2009) followed male construction workers only ($n=5867$), citing a relatively small number ($n=245$) of female employees available for the study.

The Alavinia et al. (2009) study defined obesity by a BMI of $> 30$ kg/m². Lifestyle factors were also part of the participant profile (alcohol use, physical activity, smoking habits). The mean BMI of participants was 26.1 for those with short duration sick leave ($< 2$ weeks) and 27.2 for those with long duration sick leave ($>12$ weeks). The mean age of study participants was 42.4 for those who had short durations of sick leave and 47 for those who had long durations of sick leave. Professional occupation was included in the participant demographic information and all study participants were Caucasian.

Capodaglio et al. (2010) used credible sources, fact sheets, peer reviewed research articles, and large population-based data from organizations such as WHO, the Journal of Occupational Health, the Italian National
Institute of Statistics, as well as the Centers for Disease Control and Prevention (CDC) to develop the content of their review. Their review provided a detailed description of functional limitations related to obese adults and factual evidence of health challenges unique to obese employees. Harvey et al. (2010) used “frequency of sick leave/work time lost due to sick leave” (p.18) for the primary outcome measures and anthropometric data as a subcategory in which to cross reference data. However, height and weight measurement measures and procedures were not described in detail. Therefore, it is difficult to assess reliability of outcome measures. Based on the study’s design, collection procedures, and data analysis, this study appears to be replicable.

Neovius et al. (2008) only used PubMed to search for relevant articles for their systematic review. No formal criteria (i.e. Cochrane critical appraisal) were described in the analysis of the quality and validity of each study included in the review, although search terms and search results were discussed. The strength of the Neovius et al. (2008) systematic review is limited due to the diminished search strategy and the lack of detail regarding the study selection, the validation of study quality, and the inclusion/exclusion criteria.

Study results were similar and consistent across all studies. Obese employees use more sick leave than “normal weight” (BMI < 30kg/m²) (Neovius et al., 2008) and are at increased risk for physical and psychological injury on the job (Capodaglio et al., 2010). Despite heterogeneity between the studies described in the Neovius et al (2008) systematic review, the researchers report that the evidence presented in their study shows that frequency and duration of sick leave is higher in obese employees in comparison to non-obese employees. Harvey et al (2010) included “post-hoc” evaluations of the relationship “between BMI and total sickness absence” that confirmed a significant ($p<0.001$) cross sectional relationship. Capodaglio et al (2010) concluded that “due to the relationship between BMI, disability, and health costs, prevention of obesity is…a priority in many workplaces” (p.15).

Confidence intervals (95% CI) were discussed in the Neovius et al (2008) systematic review as well as in the Alavinia et al. (2009) study. Work days lost and absence due to illness are related at a significant level ($p<0.01$) and obese individuals use 4 more sick days per year compared to “healthy weight” individuals (Harvey et al., 2010).

Alavinia et al. (2009) used Poisson regression analysis “with repeated occurrence of sickness absence.” Statistical significance was set at $p<0.05$ for comparison among three absence due to illness durations (short, moderate, and long term). Drop outs were accounted for in the Harvey et al. (2010) study only.

In summary, this group of studies highlights the key issues related to obesity and absence due to illness. Obesity increases the risk of musculoskeletal disorders, cardiovascular ailments, and psychological wellbeing (Capodaglio et al., 2010). This group presents a moderate argument that there is a strong linear relationship between an employee’s BMI and the number of absence due to illness days incurred. A stronger systematic review and more information about sample selection and inclusion/exclusion criteria would strengthen the conclusions presented by this group of studies.

**Telephone Health Coaching and the Obese Employee**

The 6 studies selected in this group evaluated the effectiveness of telephone health coaching in a variety of work settings using multiple weight-related outcome measures.

Supportive literature was detailed in all studies. Two studies provided a formal literature review while the remaining studies provided
multiple relevant citations of previous work. Reijonsaari et al. (2012) argued that there is a lack of evidence supported by randomized control studies that examine the effect of “long distance counseling” (telephone health coaching) on the physical activity level, productivity, and absence due to illness of employees. The van Weir (2009) study provided background information on the use of health coaching for obese employees in the healthcare setting.

Most studies in this group provided details about participants as well as inclusion and exclusion criteria. Interestingly, only 1 study provided details about employee job status or job category. Reijonsaari et al. (2012) reported that the majority of their study subjects had clerical positions (89%). Two studies reported ethnic characteristics of participants with Caucasians making up more than 80% of the study population in both studies.

The mean age of participants was 39 and most studies leaned heavily toward female participants (only 2 studies had more than a 50% male population).

The mean BMI was 31.26 for the three studies that reported BMI. A fourth study described the mean percentage of obese participants (46.9%) (BMI > 30kg/m²). Exclusion criteria in this group included individuals less than 18 years of age and subjects undergoing cancer treatment.

Interventions focused on telephone or “outreach” coaching by either a single interventional coach or a multidisciplinary team. Participants were given written education materials and telephone health coaching about physical activity, weight loss, diet, and stress.

The use of behavioural or cognitive therapy as part of the intervention appeared in 3 out of 6 studies. All studies used interventional coaches/counsellors to make initial contact with participants once consent was obtained. Not all studies used professionals in the role of health coach/counsellor. A description of the qualifications of health coaches/counsellors was missing in three studies.

Duration of telephone health coaching sessions varied from 20 minutes to 30 minutes per session. A formal schedule of participant contact (telephone health coaching) was established in 3 of the 6 studies. Contact was made by a coach/counsellor every 2 weeks in 2 of the studies. Coaches in the Merrill et al. (2010) study made contact with participants at 3, 6, and 12 months but gave participants unscheduled access to coaches if they needed assistance or had any questions. Three studies including Van Wormer et al. (2009) provided participants with a specific number of contacts over the course of the study period (10 phone calls over 20 weeks).

Manuals, modules, and/or a work plan were used to enhance telephone health coaching strategies in three studies. Participants were given assignments related to a specific topic area and were expected to complete the assignment or task before the next session with their coach. An accelerometer (a digital device used to measure acceleration of motion) was used as part of the intervention in the Reijonsaari et al. (2012) study. Reijonsaari et al. used an accelerometer (the PAM 200 and PAM BV models) to measure the amount of energy each participant used while walking on a treadmill or walking up stairs.

Body weight and/or BMI were used as the primary outcome measures in 4 out of 6 studies. Due to ethical considerations, the Van Wormer et al. (2009) study did not blind participants. Researchers felt “uncomfortable withholding a potentially effective treatment for obesity… [but]…recognized the importance of testing our experimental intervention against a control group that received no treatment during the first six months of the study” (p.447).

Rohrer et al. (2012) was the only study that provided a very brief sampling description.
However, it did not provide validity and reliability data of questionnaires used in the study.

Of the 6 studies that examined telephone health coaching effects on employee health, 4 used weight and BMI as primary outcome measures. Two out of the 4 studies using BMI and weight as a primary measure reported statistically significant differences between the intervention and control groups. Individuals in the intervention group lost more weight or had higher reductions in BMI in comparison with the control group.

The mean weight loss in the 5 studies that reported weight loss or reduced BMI was as follows: mean BMI reduction of 4.7 kg/m² and mean weight loss of 3.9 kg. The $p$ values associated with the weight loss and BMI group comparisons reported were <0.001 in 4 out of 5 studies. The mean change in weight loss was -0.5 kg in favour of the control group (confidence interval of 95%). Of the 2 studies (Reijonsaari et al., 2012 and van Weir et al., 2009) that reported confidence intervals, a level of 95% was used.

Wennberg, Marr, Lang, O’Malley & Bennett (2010) note that a flexible and targeted telephone case management has a positive effect on individuals that need it the most – those that are “neither too sick nor too well for telephone based care” (p. 1252). The study by van Wier et al. (2009) adds to this argument with supportive data that indicates telephone health coaching is an effective weight management strategy for obese employees that can be implemented in the work setting.

In summary, this group of studies indicated that a targeted telephone health coaching program focused on the reduction of BMI in at risk and obese employee populations, has a positive effect on weight loss, waist circumference, and BMI.

**Discussion**

This review incorporated international as well as national studies, both large and small, that used BMI as a means of defining obesity in addition to its use as a primary outcome measure. In the 13 studies that used BMI to define obesity, the CDC definition (BMI > 30 kg/m²) was utilized. Lower cut offs (BMI > 25 kg/m²) and higher cut offs (BMI > 35 kg/m²) were also presented in this review. BMI is a reliable measure (CDC, 2011) that is readily available and simple to calculate.

BMI-defined obese employees suffer from major chronic conditions including diabetes, musculoskeletal injury, and heart disease (Capodaglio et al., 2010). Furthermore, there is strong evidence that obese employees are sick more often than their non-obese counterparts (Neovius et al., 2008). Consequently, obese employees use more medical and health benefits which have a financial impact on employers (Trogdon et al., 2008).

This review has a number of strengths. Studies were assessed in a methodological manner, using well established critical review criteria for qualitative (Letts et al., 2007), quantitative (Law et al., 1998), and systematic studies (JAMA, 1994).

Most of the studies in this review used a moderate number of participants (12 out of 24 studies included more than 1000 participants, 5 out of 24 studies included more than 5,000 participants). Among non-systematic reviews included in this study, the mean number of study participants (including studies based on health data records) in this systematic review was 11,235. Systematic reviews with abundant participant data provide stronger evidence compared to reviews that include studies with a low number of participants (The Cochrane Collaboration [online], 2002). Confidence intervals were high at 95% in thirteen of the
twenty four studies presented in this systematic review.

Many of the studies in this review had similar conclusions. For example, studies focused on obesity and absence due to illness concluded that there is a strong relationship between high BMI and increased employee absence due to illness, while workplace strategies examined in this review indicated that programs offering employees the opportunity to improve diet and increase exercise results in employee weight loss and decreased BMI. Decreased BMI can decrease chronic health risks (Loeppke et al., 2010). Although many studies had similar conclusions, there were also studies in this review that revealed weight loss and/or risk reduction interventions had no effect on the study population.

Five studies presented conclusions that did not align with the majority of studies analyzed in this systematic review. For example, Reijonsaari et al. (2012) concluded that there was no statistical difference between the intervention and control group with regards to physical activity (PA) participation at 12 months. They had no explanation for this lack of effect but certain biases including selective participation and rigour of PA monitoring may have influenced outcomes. Additionally, Groeneveld et al. (2011) evaluated the effects of PA, diet, and smoking interventions in male workers and found that differences between the control and intervention groups were not statistically significant.

Furthermore, Van Weir et al. (2009) used telephone health coaching as well as on-site PA programs to improve the waist circumference, diet, and PA levels in study subjects. The results produced very small weight loss (mean - 1.5kg) with no significant difference between the phone and internet based intervention groups. The Van Weir et al. (2009) study was based on self-reported behaviour outcomes. It excluded follow up data for 29% of the participants, did not include details about missing information, and did not explain or hypothesize the reason for the small amount of weight loss.

Minimal weight loss was also an issue in the Siegel et al. (2012) study. Researchers concluded that “there was no significant difference between intervention and control groups for waist-hip ratio, weekly minutes of physical activity or fruit and vegetable consumption” (p. 330). Alternatively, researchers did note that the intervention group lost 0.23 pounds in comparison to the control group that gained 2.15 pounds. Self-reported diet and PA levels (participants reported being moderately physically active at the beginning of the study) may be subject to social desirability bias and do not represent the strongest data source.

Finally, Finkelstein et al. (2009) studied a small number of employees (n=279) of various community colleges in North Carolina and found that employees who lost at least 5% of their baseline weight did not reduce medical spending or health-related absenteeism over a 12 month period. Their explanation for the lack of statistically significant differences between the control and intervention groups was summarized on page 6 where researchers admit “the sample used in the medical claims analysis is likely to be even healthier than the general obese population given the exclusion criteria…modest weight loss may not directly translate into measurable short-term reductions in medical expenditures or absenteeism.” They used insulin dependent diabetics as an example, noting that a reduction in weight would not necessarily result in less insulin requirements (and therefore would not necessarily decrease drug claims).

A number of biases were found in the studies reviewed, including social desirability bias (this was true of 15 studies in this review), selection bias due to self-enrolment methods, and technology bias (telephone coaching
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requires a certain level of technological skill, in some cases, self monitoring required a certain skill level in order to interact with the monitoring technology.

In an era of skyrocketing health care costs, epidemic obesity and multifaceted employee absence challenges, a targeted telephone health coaching program focused on the reduction of BMI in at risk and obese employee populations is a convenient, time saving option that is fairly easy to implement while having a similar positive impact compared to traditional face-to-face health coaching. Groeneveld et al. (2011) provided motivational interviewing (a type of face-to-face health coaching) as the primary intervention in their study which produced a mean weight loss of 0.9lbs over a year. In comparison, Van Wier et al. (2009) demonstrated through their randomized control study that telephone health coaching has a positive effect on weight loss – mean participant weight loss was -1.6 lbs over 6 months.

**Implications for Clinical Practice**

According to Statistics Canada (2012), 61.8% of Canadians are employed. Additionally, 2005 data revealed that 24% of the Canadian population is obese (Statistics Canada, 2012). These are sobering statistics that further support the need for better employee health strategies.

Health care organizations in particular are in a unique position to take advantage of telephone health coaching as their employee population are more prone to high levels of stress, poor eating, and activity habits leading to obesity (Han, Trinkoff, Storr, Geiger-Brown, 2011). In fact, Han, et al. (2011) discovered that 27.1% of nurses in their study (n=2103) were obese. Additionally, they concluded that “…to decrease nurse obesity rates…objective measures and…solutions to improve nurse health and safety are needed” (p. 494).

**Conclusion**

Obesity and increased BMI is associated with chronic conditions including cardiovascular pathologies, diabetes, psychological illness, and musculoskeletal disorders (Capodaglio et al., 2010). Consequently, obese employees are at higher risk for chronic illness and chronic illness-related absence due to illness (Harvey et al., 2010).

Obese employees who have high rates of absence due to illness are less productive on the job and are a heavier financial burden to employers compared to non-obese employees (Trogdon et al., 2010). Moreover, studies show that on a short term basis (up to 6 months) improved diet, increased exercise, and reduction of risk behaviours has a positive impact on weight loss and BMI reduction in obese working adults (Morgan et al., 2011). Therefore, therapeutic interventions such as telephone health coaching that emphasizes weight loss and BMI reduction is an effective short term method of improving employee health (Anderson et al., 2009). Consequently, employees who reduce their chronic illness risk also reduce their frequency of chronic illness-related absenteeism (Loeppke et al., 2010).

Easy implementation (or replication) and less demand on time and resources in addition to fairly low cost (Wennberg et al., 2010 reported the cost of their telephone coaching intervention was just $2.00 per person per month) make telephone health coaching an attractive option for employers interested in improving the health of obese employees.

Overall, there is moderate evidence that telephone health coaching has a positive (short term) impact on the reduction of BMI and chronic illness-related absenteeism among obese employees.

**Conflict of Interest Statement**

None declared.
References


Harvey, S. B., Glozier, N., Carlton, O., Mylletun, A., Hendersn, M., Hotopf, M. & Holland-


