

## Participation Rates in a Worksite Wellness Program Using E-Mail Wellness Messages

Larry W. Anenson<sup>1,2</sup>, Ardith Brunt<sup>1</sup>, Donna J. Terbizan<sup>1</sup> & Bryan Christensen<sup>1</sup>

<sup>1</sup>Department of Health, Nutrition and Exercise Sciences, North Dakota State University, Fargo, ND, USA

<sup>2</sup>Fargo Cass Public Health, Fargo, ND, USA

Correspondence: Ardith Brunt, Department of Health, Nutrition and Exercise Sciences, North Dakota State University, P.O. Box 6050, Fargo, ND 58105-6050, USA.

Received: August 6, 2013 Accepted: August 21, 2013 Online Published: October 21, 2013

doi:10.11114/jets.v2i1.196

URL: <http://dx.doi.org/10.11114/jets.v2i1.196>

### Abstract

The purpose of this study was to determine which days of the work week had the largest rate of opened e-health messages, whether detailed or basic e-health messages were more likely to be opened, if motivation influenced the rate of message opening, and if the rate of opening messages declined over time. Ninety-one city employees (52 male and 39 female) of a medium-sized Midwestern city in the United States participated in the study. Participants were divided into four groups according to desire to receive wellness email messages and amount of information provided in the message. These groups were motivated-detailed (n=25), motivated-basic (n=23), unmotivated-detailed (n=20), and unmotivated-basic (n=23). A total of 38 weekly messages focused on one of seven dimensions of wellness: physical, intellectual, emotional, spiritual, social, environmental, or occupational wellness. The basic e-health message consisted of an e-mail with health tips for the specific topic; whereas the detailed message included the basic message plus links to games, surveys, and websites to supplement the basic message. A total of five to six e-health messages for each wellness dimension were sent by a scheduled rotation. Day of the week showed no differences in frequency of opening messages. Employees who wanted to receive the messages were more likely to participate. Basic messages were more likely to be opened. Overall, there was a steady decline in the number of messages opened. It was concluded that sending basic e-health messages any day of the week to employees who desire such information might be the most effective.

**Keywords:** workplace health participation, dimensions of wellness, e-health message

### 1. Introduction

Worksite wellness programs have been shown to reduce absenteeism, medical costs, and health risks associated with chronic disease (Goetzel & Ozminkowski, 2008). Moreover, worksite wellness programs decrease employee turnover, improve productivity, assist with employee recruitment and retention, and bolster morale, which leads to future benefits for both the employee and employer (Chapman, 2005; Goetzel & Ozminkowski, 2008; Linnan et al., 2008). A goal of Healthy People 2010 was to have at least 75% of all worksites, regardless of size, offer comprehensive wellness programming to employees (U. S. Department of Health and Human Services, 2010a). This goal has been modified (ECBP HP2020-5) in Healthy People 2020 to increase the number of worksites that offer comprehensive employee health-promotion programs to their employees (U. S. Department of Health and Human Services, 2010b). Moreover, employee wellness programming is central to the Affordable Health Care Act signed into law in 2010 ("Patient protection and affordable care act.," 2009).

To date the most comprehensive evaluation of worksite wellness programs that assessed programs with at least 50 employees was recently completed by Rand Corporation (Matke et al., 2013). This report revealed that about 50% of all employers provide a wellness program encompassing approximately 75% of all workers. These percentages indicate that companies that employ large numbers of employees are more likely to provide a wellness program. Some companies choose not to have a worksite wellness program because employee participation is low or that having a program is not feasible for their company (Hannon, Garson, et al., 2012). Other employers may be philosophically opposed to interfering with their workers' private lives, health habits, and medical decision-making, considering such actions as playing the role of "big brother" (Goetzel & Ozminkowski, 2008; Hannon, Hammerback, Garson, Harris, & Sopher, 2012).

The 2004 National Worksite Health Promotion Survey found five obstacles that impede worksite wellness programs: lack of employee interest accounted for 63.5%; insufficient staff resources contributed to 50.1%; inadequate funds were responsible for 48.2%; failure to engage high-risk employees added another 48%; and the inability to elicit the support of upper management resulted in 38%, with many employers identifying several obstacles (Linnan et al., 2008). Even at companies offering worksite wellness programs, there may be a variety of reasons why employees choose not to participate. Barriers to participation in worksite wellness programs among employees include lack of time to participate, resistance to breaking old habits, structural barriers, a perception that wellness programs are contrary to their work culture, and/or skepticism about management's commitment to improving employees' health (Lassen, Bruselius-Jensen, Sommer, Thorsen, & Trolle, 2007; Person, Colby, Bulova, & Eubanks, 2010). Personal privacy can be an issue for employees because making healthy personal behavioral changes may be a sensitive topic. This is particularly true for older workers with multiple health problems, who see company involvement in their health as an intrusion to their privacy (Robroek, van de Vathorst, Hilhorst, & Burdorf, 2012).

Internet-based programs have the potential to reduce some of these barriers and to reach a broad employee population with minimal delivery cost after the initial message development (Franklin, Rosenbaum, Carey, & Roizen, 2006; Plotnikoff, Pickering, McCargar, Loucaides, & Hugo, 2010). For over 130 million Americans employed across the United States, workplaces would provide a large audience for chronic-disease prevention activities (Carnethon et al., 2009). E-health applications hold tremendous promise to increase consumer access to relevant information and to encourage the adoption of health behaviors (Kreps & Neuhauser, 2010). It is estimated that 75% of adults are regular internet users (defined as those who use the internet and send/receive e-mail "at least occasionally") and that 92% of American adults between the ages of 18 and 29 years old access the internet (Bennett & Glasgow, 2009). Because the majority of adults are employed and use the internet, workplaces where computers are easily accessible provide excellent opportunities to expose a large number of adults to health-promotion programs (Young, 2006). If the use of company computers is approved for this effort, employees can benefit from e-health messages without their co-workers and/or supervisors knowing. Many companies require employees to use computers frequently, so providing health and wellness information utilizing this technology could be efficient. In addition, e-health messages can be accessed 24 hours a day, 7 days a week.

The issue becomes how employers can encourage their employees to participate. Increasing employee participation should be a goal of worksite wellness programs to ensure maximum benefits as the employer return on investment increases directly and indirectly (Baicker, Cutler, & Song, 2010). Approximately one in five employees participate in worksite wellness programs (Wellness Manager's Blog, 2009). A review of 23 worksite physical activity and/or nutrition studies published between 1988 and 2007 found varied participation rates, ranging from 10% to 64%, with a median of 33% (Robroek, van Lenthe, van Empelen, & Burdorf, 2009). Participation rates were higher when incentives were offered and when the program consisted of multiple components aimed at multiple behaviors (Robroek et al., 2009). The use of incentives to encourage employee participation in online worksite wellness programs was examined (Wilhide, Hayes, & Farah, 2008). Of the 87 employer groups, 52% offered incentives for participating in the employer-based disease-management program. From 1% to 23% of the eligible employees completed a disease-management program, and researchers concluded that e-mail communications and financial incentives were effective in promoting the company's disease-management program (Wilhide et al., 2008). Incentives of \$50 or more have been shown to be most effective in increasing employee participation (Gingerich, Anderson, & Koland, 2012; Herman et al., 2006; Mattke et al., 2013; Wilhide et al., 2008).

Since participation in wellness programming varies widely, employers desire to get the largest return on investments (Goetzel & Ozminkowski, 2008; Robroek et al., 2009); therefore, the use of low cost e-mail wellness messages is one way for an employer to begin wellness programming with limited start-up investment. Because workload is not uniformly distributed throughout the week, it is important to know which day/s of the week that employees are more likely to open e-health messages. Therefore, one purpose of this study was to identify which day/s of the week employees are more likely to open (which defined participation) the e-health message. A second purpose was to determine if providing more or less detail in the message increased the rates with which the e-health messages were opened. With this information, employers could send e-health messages that are likely to have the greatest impact. An additional evaluation was to determine if the desire to receive health information (motivation) related to the number of messages opened. Finally we wanted to determine if the rate of participation would decrease over time and seasons.

## 2. Methods

This quasi-experimental protocol was approved by the North Dakota State University Institutional Review Board.

### 2.1 Participants

The study participants were employees of a medium-sized city located in the Midwestern United States. This city had not developed wellness programming at the time of the study. The city employs a total of 818 full-time and part-time individuals (264 females and 554 males). Participants were recruited at the 2010 annual fall Benefits Fair that included about 20 booths related to health promotion and employee benefits. Attendance at the Benefits Fair varies annually from 37-46% (300-375) of all employees. Marketing materials for the Benefits Fair included a statement encouraging employees to stop at the wellness study booth to have their blood pressure measured and their body mass index (BMI) calculated. All employees who stopped at the booth were asked to participate in a wellness study and to sign a consent form. The initial elements of participation were to have their blood pressure, height, and weight measured, as well as their BMI calculated. Participants were given a folder with various health and wellness brochures along with a ticket to be eligible to win a \$20 gift card. On this ticket, participants were asked if they desired to receive health information and tips through their work e-mail account. The following year, study participants were invited individually via e-mail to attend the fall Benefits Fair to have follow-up biometrics measurements taken.

### 2.2 Measures

Participation in this wellness intervention was determined by totaling the number of e-mails opened within the 38-week intervention. Using ReadNotify.com, messages were tracked by the date and time each e-health message was opened. An opened e-mail message was recorded as participation.

### 2.3 Intervention

Of the 351 individuals who attended the Benefits Fair (43%), 91 employees (26%) agreed to participate in the study. There were 52 males (57% of the total participants, 9% of total male employees) and 39 females (43% of the total participants, 15% of the total female employees). Participants who completed a drawing ticket were divided into two groups depending on their desire to receive health information and tips via their work e-mail. Participants who marked "yes" were categorized in the motivated group (53%, n=48). The participants who marked "no" on their drawing ticket were categorized in the unmotivated group (47%, n=43). Participants from each group were then randomly assigned to receive a detailed or basic e-health message through their work e-mail account.

All four groups were sent a weekly e-health message using a Friday, Tuesday, Thursday, Wednesday, and Monday rotation. Participants received one of two e-health messages (detailed or basic) on the assigned day for 38 weeks. The information for all the messages was from websites that presented easy to understand information consistent with current research. The basic messages (sent to the motivated-basic and unmotivated-basic groups) contained basic information about the wellness dimension assigned for that week which was one of the following: physical, occupational, environmental, social, spiritual, emotional, and intellectual. Detailed messages (sent to the motivated-detailed and unmotivated-detailed groups) contained all the information that the basic messages contained plus additional information, such as assessments, quizzes, videos, and/or links to more information. A sample of an e-health message is shown in Table 1.

Table 1. Sample e-health message sent to study participants

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#### Basic E-Health Message

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##### Physical Wellness

##### What is a "Healthy Diet"?

The Dietary Guidelines describe a **healthy diet** as one that

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products;
- Includes lean meats, poultry, fish, beans, eggs, and nuts; and
- Is low in saturated fats, *trans* fats, cholesterol, salt (sodium), and added sugars.

##### Added to the basic-e-health message

An important process in making positive behavioral changes in physical wellness or any dimension of wellness is to make a list of motivating statements and read them from time to time. This will help to keep you focused and on track in meeting and maintaining your wellness goals.

For additional information on nutrition, go to: <http://www.mypyramid.gov/>

To watch a video on "Debunking Nutrition Myths", go to: <http://www.webmd.com/video/nutrition-myths-cbs>

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Throughout the study, each day of the week had approximately the same number of e-health messages sent (either 7 or 8). All messages had the same subject line (Weekly Health and Wellness Tip) and focused on one of the seven dimensions of wellness that were identified by the World Health Organization (World Health Organization, 2008). These dimensions are physical, intellectual, emotional, spiritual, social, environmental, or occupational wellness. A total of five to six e-health messages for each wellness dimension were sent by the scheduled rotation of Friday, Tuesday, Thursday, Wednesday, and Monday. The number of e-health messages opened was calculated as the sum of all e-mails opened over the 38-week study period. A maximum of 38 e-mails were sent to each study participant.

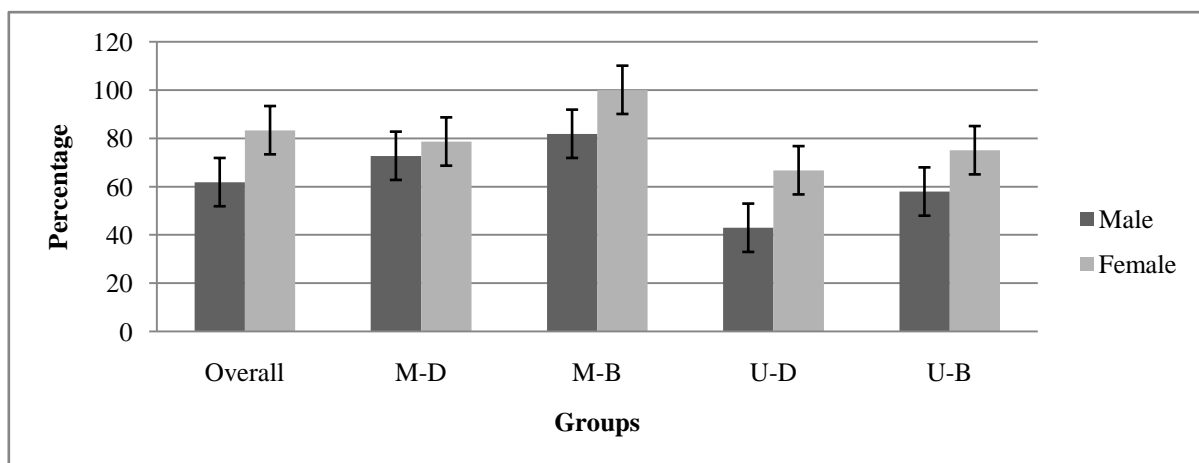
### 3. Results

#### 3.1 Statistics and Data Analysis

The data were analyzed using the SAS (version 9.2.2; SAS Institute, Cary, NC) program. Descriptive analysis, ANOVA and paired t-tests were used to determine frequency of opening messages while GLM were used to determine participation over time.

Overall 42.9% of all emails sent were opened (3280 sent, 1407 opened). Over the 38-week period, a total of 70.3% (n=64) of the study participants opened at least one e-health message. Of those 64 participants, 36 (57.1%) opened at least half (19 of 38) of the e-health messages sent. The mean number of e-health messages opened was 15.5, and the range was from 0 to 38. Five participants (5.5%) opened all 38 e-health messages; moreover, all five were in groups who received the basic messages. Twenty-seven participants (29.7%) did not open any of the e-health messages. A total of eight study participants (8.8%) officially dropped out of the study due to retirement, resignation, or requesting to not receive additional e-health messages.

Overall, the level of motivation to receive messages was related to the number of messages opened ( $F=344.3$ ,  $p<0.0001$ ). Participants who indicated at baseline they wanted to receive e-health messages (motivated) had nearly double the rate of opening the messages throughout the study (n=40, 55.2%) than those participants who indicated that they did not want to receive messages through their e-mail account (n=24, 28.9%) unmotivated. Day of the week did not appear to change this result. Of the 27 participants who did not open any of the e-health messages, 19 (70.4%) were from the unmotivated group. The level of information provided (basic vs. detailed) also was related to the number of messages opened ( $F=43.0$ ,  $p<0.0002$ ). As seen in Figure 1, there was a significant difference in the rate of opening e-health messages between each of the four groups ( $F= 5.27$ ,  $p=0.002$ ). Paired t-tests revealed that the motivated-basic group had a significantly higher rate of opening e-health messages compared to each of the other three groups.



Motivated-Detail (M-D) and Motivated-Basic (M-B) requested e-health messages

Unmotivated-Detail (U-D) and Unmotivated-Basic (U-B) did not want to receive e-health messages.

Figure 1. Percentage of group participation (opened at least one message) by gender

Females had a higher overall mean participation rate, with a mean of 21.9 e-health messages opened compared to a mean of 12.0 for male participants ( $F= 9.2$ ,  $p=0.003$ ). A larger percentage of females (n=30, 83.3%) opened at least one e-health message than did males (n=34, 61.8%). In the motivated groups, 88.5% of the females (n=23) opened at least one e-health message compared to 70% (n=7) of the females in the unmotivated groups. In the motivated groups, 77.3% of males (n=17) opened at least one e-health message compared to 51.5% (n=17) in the

unmotivated groups. Of those individuals who opened at least one e-health message, 21 females (58.3%) and 15 males (27.3%) opened at least half.

Overall, there were few differences between the days of the week that e-health messages were opened ( $F=.02$ ,  $p=0.99$ ). As seen in Figure 2, Friday had a slightly higher mean participation rate as indicated by the overall mean sum of e-health messages opened ( $M=41$ ; 47.6%), followed by Wednesday ( $M=39$ , 44.3%). Monday ( $M=37.1$ , 42.2%), Tuesday and Thursday ( $M=36.4$ , 41.3%) had the lowest participation rates.

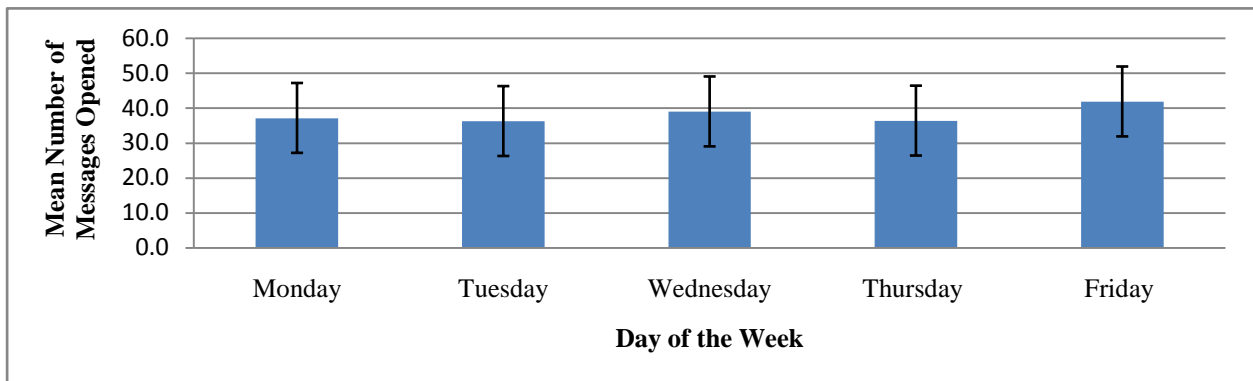
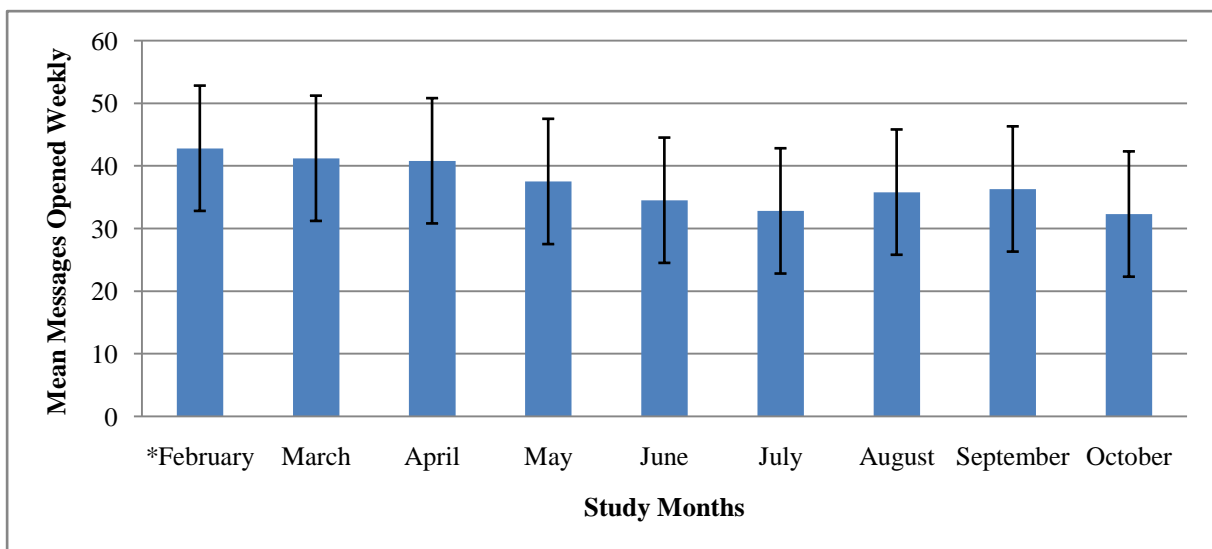


Figure 2. Mean e-health messages opened weekly (per day of the week)

There were differences in weekly and monthly participation rates. February, which was the first full month of the study, had the highest mean rate of opening e-health messages (42.8), with a gradual decline as the study continued (with the exception of August and September). The last month of the study (October) had the lowest participation rate (mean sum of e-health messages opened) of 32.3. Figure 3 details the mean average number of messages opened monthly by all participants. For every month of the study, mean participation decreased by 1.3 e-health messages opened ( $F=34.59$ ,  $p=0.0001$ ). More specifically, for every week the study continued, the participation rate decreased by 0.29 e-health message ( $F=33.80$ ,  $p=0.0001$ ).



\*Includes 1 week in January

Figure 3. Mean e-health messages opened weekly (per month)

#### 4. Discussion

This study assessed participation in a low-cost e-health worksite wellness program before there was any other wellness programming for these employees. (The annual Benefit Fair was not considered part of wellness programming.) A total of five to six e-health messages for each wellness dimension were sent by a scheduled rotation, which was Friday, Tuesday, Thursday, Wednesday, and Monday. This study was unique in that it utilized all seven dimensions of wellness (physical, intellectual, emotional, spiritual, social, environmental, or occupational wellness) to encourage healthy behaviors among participants. Most other studies focused on just the

physical or emotional dimensions of wellness (Broekhuizen, Kroeze, van Poppel, Oenema, & Brug, 2012; Cook, Billings, Hersch, Back, & Hendrickson, 2007; Franklin et al., 2006; Nyquist, Rhee, Brunt, & Garden-Robinson, 2011). The intervention e-health messages were sent to both motivated and less motivated employees at two levels of information: a short 5-10 sentence message (basic) or a more elaborate message with extra games, puzzles and links for more information (detailed).

A total of 70% of the study participants opened at least one e-health message. Of those participants who opened at least one e-health message, 56% opened at least half of the messages sent. This current study appears to have had a higher participation percentage rate than reported by others (Woodall et al., 2007). Woodall and colleagues found that only 23% of study participants responded to at least one e-mail and that 51% of these participants responded to half of the e-mails, which is different than just opening e-mail messages. For the study by Woodall, participants logged-on to a nutrition website in order to determine participation (Woodall et al., 2007) which is more time consuming and requires several steps before participation is considered. The participation rate for this current study also compares favorably to the participation rate in typical worksite wellness programs (Franklin et al., 2006; Herman et al., 2006; Wilhide et al., 2008) all of which did not require extra steps to determine participation.

#### *4.1 Gender Differences*

Rates of participation in the current study compare to similar rates in other studies. A larger percentage of all female employees (15%) participated in the worksite wellness program compared to male employees (9%). This gender difference in participation is consistent with other studies investigating worksite wellness. Franklin et al. (2006) found that over three times as many females participated in their e-mail wellness study compared to men. Not only did females have a higher percentage of opening at least one e-health message than males (83% vs. 62%), the females also had a higher percentage of opening at least half the e-health messages (58% vs. 27%). Other researchers also found similar results in the percentage of females versus males who participated in their worksite wellness intervention consisting of surveys (Joslin, Lowe, & Peterson, 2006). Joslin and colleagues (2006) had an overall response rate of 44%, with 51% of females returning their wellness survey to participate compared to 39% of males.

#### *4.2 Level of Intrinsic Motivation*

The level of motivation highly impacted the number of e-mails opened. Since incentives were not used, the desire of the participants to become more informed about the seven dimensions of wellness is one explanation for these results. Intrinsic motivation is cited as necessary for individuals to seek out health information or make behavior changes (Teixeira, Silva, Mata, Palmeira, & Markland, 2012). Without intrinsic motivation, incentives are needed to encourage participation (Gingerich et al., 2012; Seaverson, Grossmeier, Miller, & Anderson, 2009).

Information provided in these emails utilized all seven areas of wellness identified by the World Health Organization instead of focusing primarily on the physical aspects of wellness (World Health Organization, 2008). It is the integration of these seven interactive dimensions that continually influence and balance each other to create overall wellness. Over-emphasis on just one or two dimensions results in a life that is out of balance (Swarbrick, 2006). The focus on wellness helped intrinsically motivated participants to become more conscious of choices for a more satisfying, healthful lifestyle. Participants desiring this type of information to increase knowledge were more likely to continue to open the emails.

#### *4.3 Amount of Information Provided*

Although not reported by others, short, to-the-point messages were opened more frequently than those which provided additional information such as websites, videos, quizzes, and/or health links. This may indicate that brief messages are more likely to be read even though an employee is busy. If too much time is needed to read and explore the additional information, an employee may not even open the message to even see what it might contain. Moreover employees frequently cite e-mail overload as a reason for not opening informational messages (Szóstek, 2011).

#### *4.4 Day of the Week*

Not reported before, this study found no differences in the frequency of opening messages on any day of the work week. This indicates that the day that mass emails should be sent out should not favor any particular day of the work week; although varying the day may be make a difference for a particular employee.

#### *4.5 Weekly and Monthly Participation Rates*

Our research indicated that participation declined over time, especially after 20 weeks, which is consistent with other studies (Franklin et al., 2006). Although these researchers anticipated a dip in the summer months due to

planned time off, the participation rate did not return to pre-summer levels. It is important to note that several of those who discontinued the study were consistently reading the emails the first several months of the study which may have influenced participation numbers in that later part of the study. Another aspect of the decline in participation rates is that individuals are seeking something new, different and exciting. Therefore, the plain e-health messages generated may have lost some of their appeal to these individuals.

A limitation of the study is that traditional health-promotion programs attract primarily those already motivated to consider health-behavior changes, which might not represent the true population at a worksite (Dutta-Bergman, 2004). It is unknown if study participants actually read the information in the e-health message or deleted the opened messages without reading them. Future studies should quantify the number of messages that were actually read.

High levels of participation may be more common in worksites where employees have regular computer access and where the company not only allows, but encourages, the employees to receive and respond to e-health messages. Settings where employees share a computer or where they do not regularly access a computer and e-mail account may show limited participation. Similarly, some worksites forbid the use of computers for personal use so the use of e-health messages would have to be encouraged. For this e-health intervention to be successful, computer access and adequate time to read health-promotion materials are imperative.

The last limitation is the lack of information related to participants' job classifications, age, or computer access. Further research is needed to investigate these factors.

## 5. Implications

E-health messages can be an effective way to share health-related information for those desiring such information, especially for brief interventions. The findings of this study have implications for managers, supervisors, and health-promotion staff responsible for implementing worksite wellness initiatives at their companies. Brief e-health messages are more likely to be opened than those that require more time to read. Participants will not continue to open and presumably read e-health messages unless they have a desire for the information that is provided. Wellness programming must continue to evolve to garner the employees' attention. Knowing how to get the greatest return on investment is essential when deciding how to invest resources to meet the needs of employees and to reduce the risks for chronic disease. The information from this study and similar ones encourages health professionals, employers, and others to explore the use of e-mail to deliver e-health messages to enhance current worksite wellness programs.

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