



Physical Activity Prevalence and Awareness after an Exercise is Medicine on Campus Campaign, 2011-2013

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Abstract

Exercise Is Medicine (EIM) is a global health initiative to establish physical activity. Exercise Is Medicine with Altitude (EIMA) was a campaign implemented to promote physical activity (PA) on a university campus.

Objective: To evaluate awareness of the EIMA campaign and PA of students.

Participants: Individuals enrolled in a regional comprehensive university.

Methods: An online questionnaire was administered over three years (2011-2013). Respondents were queried on awareness of the EIMA campaign and modified BRFSS PA questions.

Results: Questionnaire responses were as follows: Y1 (n = 1411), Y2 (n = 622), and Y3 (n = 888). There was a significant difference across all years for awareness of the EIMA campaign by PA level ($p < .05$). Awareness and PA increased during each year. During Y3 awareness increased the likelihood of being PA by 1.76.

Conclusion: Results suggest that more aggressive awareness techniques should be examined in an effort to promote PA in university settings.

Keywords

Media, University, Young adults, Self-report, Knowledge

male and 51.0% of female college students self-reported not meeting recommended amounts of MVPA during the previous 7 days [6]. As nearly half of all college-aged students are not engaging in PA [6], and health behaviors are established in late adolescence and early adulthood [7,8], it is important that PA behaviors be established during college years so that they can be maintained through life [9]. Further, the lack of PA has been noted as a public health concern and identified as one of the 6 priority areas in the Healthy Campus 2020 Objectives [10,11].

Exercise is Medicine (EIM) is a global health initiative to establish PA as a tool for the prevention and treatment of disease through evidence-based strategies in primary health settings. In 2007 the American College of Sports Medicine and the American Medical Association developed EIM with the main goal to incorporate physical activity as a standard part of the medical paradigm within healthcare structures [12]. Exercise is Medicine – On Campus (EIM-OC) is a branch of the overall EIM campaign specifically addressing universities' and colleges' ability to promote the importance of PA. The EIM-OC has 4 ways in which to encourage higher-education campuses to work together to increase PA: 1) incorporating PA as part of the daily campus culture, 2) assessing PA during student health visits, 3) providing tools to strengthen PA behaviors, and 4) Connecting health care providers on campus with fitness centers and specialists to provide referrals for exercise prescription [13].

The campus-specific Exercise is Medicine with Altitude (EIMA) campaign was based on its national parent model to encourage PA on campus. EIMA was administered at a regional comprehensive university over a three-year time frame, spanning from 2011 to 2013. The EIMA campaign aimed to inform students of the health benefits of exercise and was delivered through various ways which include; flyers on campus, Facebook, word of mouth through the health center and the recreation centers, and in the health sciences department on campus.

Therefore, the purpose of this study was to evaluate the awareness of the EIMA campaign, PA of students on the university

Introduction

The benefits of physical activity (PA) are well known, and documented to include: reduced risk of cardiovascular disease, cancer, diabetes, depression, and other widespread preventable disease [1,2]. It is recommended that adults participate in at least 150 minutes of moderate-to-vigorous physical activity (MVPA) per week in order to receive health benefits [3]. Despite the numerous benefits one can accumulate through participation in PA, levels remain low and decline during adolescence into adulthood [4,5]. According to the 2014 National College Health Assessment 47.0% of

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campus, and effectiveness of the campaign's influence on PA levels. We conducted analyses to assess the impact of campaign awareness and related factors on the likelihood that respondents would meet PA recommendations of 150 minutes per week. We hypothesized those who reported awareness of either the national and campus-specific campaign was more likely to report meeting PA recommendations [3]. We also sought to explore predictor variables and overview of PA between the active and inactive students across the three years.

Methods

Design and subjects

The EIMA campaign was based on the national EIM-OC model with alterations made to fit the specifics of the university. An online questionnaire was developed to assess awareness of EIM, as well as the EIMA campus-specific campaign at the university. Cross-sectional data collected in the fall (September/October) and spring (April/May) semesters during the 2011–2013 academic years were used to assess awareness of EIM and EIMA over the three-year period. All students enrolled in a regional comprehensive university in the Rocky Mountain region of the United States comprised the study population and were eligible to respond via an email link sent directly to their university email. This study was approved by the Institutional Review Board at the University of Colorado, Colorado Springs.

Measures and procedures

The EIMA campaign was delivered through various modes; these include, Facebook, flyers on campus, word of mouth through the health center, recreation center, and in the health science department on campus. An online questionnaire was utilized to determine whether students had heard of the EIM or EIMA campaigns, and to examine which mediums students had used to receive the message about the campaigns. In addition, the online questionnaire queried students' PA behavior utilizing a modified form of the Behavioral Risk Factor Surveillance System Survey (BRFSS) PA questions. Specifically, days per week and minutes per day of MVPA, were used to categorize participants as meeting PA recommendations or not meeting PA recommendations. Days per week of MVPA were determined by the questions, "In an average week, how many days do you engage in moderate (cannot sing, but can still talk) or vigorous (cannot talk) physical activity?" Minutes per day was determined by the questions, "For each day, how many minutes do you engage in activity that is at least moderate intensity or harder?" The BRFSS physical activity questions has been shown to have acceptable reliability and validity in classifying adults into levels of recommended amounts of PA [14].

The online questionnaire was administered through campus email to all students once during the fall 2011 semester, spring 2012 semester, fall 2012 Semester, spring 2013 semester, and fall 2013 semester, respectively. Students were asked to complete the questionnaire as part of a research project to increase PA and health benefits associated with the university population, and were provided a window of approximately 6 weeks at each administration to respond. Surveys were sent within the first month of each semester.

Statistical analysis

A direct logistic regression was run with the awareness of either the nationwide or college-wide campaign and the source of the students' information as independent variables that are thought to predict the likelihood of PA levels among students, as defined by a minimum of 150 minutes per week. Data were analyzed separately for 2011, 2012, 2013. The model across all years contained eight independent variables (awareness of *Exercise is Medicine* campaign, awareness of the campus-specific campaign, and multiple variables assessing the method through which respondents were made aware of the campaign). Descriptive statistics and odds ratios were calculated across all years.

Results

Questionnaire responses were as follows: Year 1 (n = 1411), Year 2 (n = 622), and Year 3 (n = 888). Days per week and minutes of PA per week for those meeting recommended amounts of physical activity compared to those not meeting recommendations, for each year are shown in table 1. Awareness of the EIMA campaign by physical activity level for each year is shown in table 2. There was a significant difference across all three years for awareness of the EIMA campaign by PA level (p < 0.05), and both awareness and PA increased during each year. The full model containing all predictors was statistically significant for 2011, $X^2(7, N = 1,411) = 17.90, p = 0.012$, 2012, $X^2(7, N = 519) = 18.01, p = 0.012$, and 2013, $X^2(7, N = 879) = 21.08, p = 0.004$, indicating that the model was able to successfully distinguish between respondents who reported not being physically active and those who reported that they are. Between the three years of data assessed, the model explained between 1.3% and 4.7% of the variance in PA level, and correctly classified between 57.0% and 64.0% of cases.

Frequency tables of the predictor variables regarding how students heard about recommendations are shown in table 3. The only consistent factor across all years was that students meeting PA recommendations were significantly more likely to report having heard about the campaign at the recreation center compared to those

Table 1: Students meeting and not meeting physical activity recommendations during a three-year assessment.

Variables	Y1 (n = 1411)	Y2 (n = 622)	Y3 (n = 888)
Meeting PA recommendations	n = 629	n = 332	n = 550
Physical Activity Days/WK	4.59 ± 1.30	4.93 ± 1.24	4.85 ± 1.21
Minutes of PA/WK	332.54 ± 277.82	390.38 ± 357.48	339.35 ± 209.68
Not meeting PA recommendations	n = 782	n = 190	n = 338
Physical Activity Days/WK	1.99 ± 1.35	2.31 ± 1.53	2.17 ± 1.34
Minutes of PA/WK	58.05 ± 45.26	70.59 ± 47.46	66.60 ± 46.70

Table 2: Differences between students meeting and not meeting physical activity recommendations and awareness of EIMA campaign between all three years.

Variable	Physically Active	Not Physically Active	Sig
Awareness of National Campaign			
Y1	26.6% (n = 629)	18.6% (n = 782)	**
Y2	29.0% (n = 332)	22.1% (n = 190)	*
Y3	37.2% (n = 550)	27.5% (n = 338)	**
Awareness of Campus-Specific Campaign			
Y1	23.9% (n = 629)	19.7% (n = 782)	*
Y2	27.5% (n = 332)	25.9% (n = 190)	
Y3	34.3% (n = 550)	28.3% (n = 338)	*

*p < 0.05; **p < 0.001

Table 3: Differences between students meeting and not meeting physical activity recommendations and mode in which they heard about EIMA over three-year period.

Variable	Physically Active (n = 629)	Not Physically Active (n = 782)	Sig.
Heard about it at Health Center			
Y1	2.5%	1.2%	*
Y2	2.7%	2.1%	
Y3	2.4%	3.0%	
Heard about it at Rec Center			
Y1	5.6%	2.8%	**
Y2	9.0%	3.7%	**
Y3	11.3%	5.3%	**
Heard about it through Health Sciences Department			
Y1			
Y2	4.6%	1.8%	**
Y3	8.4%	6.8%	
	6.9%	4.1%	*
Heard about it on Facebook			
Y1	1.3%	0.3%	**
Y2	3.6%	0.0%	
Y3	2.2%	1.8%	
Heard about it through Flyers			
Y1	12.7%	9.7%	*
Y2	13.6%	13.7%	
Y3	15.6%	13.0%	*
Heard about it through Other Source			
Y1	7.5%	7.2%	
Y2	7.2%	8.9%	
Y3	9.5%	12.7%	*

*p < 0.05; **p < 0.001

Table 4: Predictors Significantly Affecting Physical Activity Level.

Year	Variable	B	Sig.	Odds Ratio
Y1	Heard about the campaign in Health Sciences Department	-0.829	.029	0.437
Y3	Heard about Exercise is Medicine (with Altitude) campaign	-0.563	.026	0.569
	Heard about the campaign through "Other" sources	0.679	.018	1.972

not meeting PA recommendations ($p > 0.05$). None of the variables consistently contributed to the regression model. Awareness of either EIM or EIMA contributed significantly to the model in 2013 (Table 4). In 2011, the likelihood of being physically active increased by 2.29 times when participants reported that they did not hear about the campaign through the Health Sciences Department. None of the predictors were identified as contributing significantly to the model in 2012. In 2013, two significant predictors were identified. Awareness of the EIM or EIMA campaign increased the likelihood of being physically active by 1.76 times over those who were not aware of the campaign. Additionally, the odds of someone being physically active were 1.97 times greater when they heard about the campaign through sources other than the health center, recreation center, and health sciences department, flyers or Facebook (Table 4).

Comment

Our results show a significant difference across all three years for awareness of the EIMA campaign between those meeting PA recommendations and those not meeting PA recommendations. In addition, both awareness and PA days per week and minutes per week increased across each year. Importantly, frequency tables of predictor variables regarding how student heard about recommendations indicate important modes of delivery for PA messaging. These data suggest that awareness of EIM and EIMA may have influenced PA levels of students attending the university. The findings also provide important information on where college students are receiving information regarding PA. Lastly, during the first year, participants who did not hear about the campaign through the Health Science Department were significantly more physically active.

Awareness of EIM and EIMA increased across the years and, generally, the number of physically active people also increased over the three-year period assessed. Participants with increased awareness of EIM and EIMA campaign could have impacted PA levels. Mass media campaigns have demonstrated that improvements occur in short-term PA message recall, increase in knowledge regarding PA, as well as an increase in PA levels compared to others who were not exposed to the message [15]. Leavy [16] conducted a systematic review on 18 PA mass media campaigns from 2003 to 2010 and found that campaign awareness levels ranged from 95% recall to 17.4% post-campaign recall of the PA message. Changes in PA behavior were measured in 15 of the 18 campaigns reviewed and seven studies reported a statistically significant increases in reported PA levels. Thus, mass media campaigns may be a viable and effective way to increase PA behaviors. However, the effects of stand-alone mass media campaigns to increase PA behaviors are inconclusive in the general populations [17]. It is difficult to draw a causal link between awareness and PA and increases in PA behaviors, but these results may suggest that more aggressive awareness techniques should be examined in an effort to influence social norms and promote PA in university settings.

Social internet sites have been suggested as an effective platform among clinicians and public health officials in which to share health information [18,19]. In addition, social media has the potential to offer a medium to communicate health issues within certain populations. There are several benefits with the new dimension of social media and health communication; however, there are also a number of limitations [20]. While many practitioners may intuitively

believe that social media may be an effective channel to communicate messages to a college-aged population, the current study suggests that awareness of the EIMA campaign through social media was the least frequently reported mode in which participant recalled the message. In part, this may be due to the amount of information overload. It has been noted the growing quantity and decreased quality of information distributed results in user frustration which lead to deletion, omission, and ignoring messages [21]. Conversely, EIMA study participants reported print media as the most frequent predictor variable of awareness about the campaign across all years and activity level. Exposure to print media within the university environment may be an effective way to deliver health messages. Although social media has potential to be an operative delivery message for health information, it is important for public health officials and clinicians to use multiple modes of delivery to distribute health messages.

Of concern, those in the health related field were significantly less likely to be physically active if they heard about the campaign through the Health Science Department. These findings were not consistent across all three years, however, it is important to note that a consistent health message and PA was not reported among emerging health practitioners. It may be assumed that oftentimes those in a health major would have healthier behaviors and increased awareness with their current department's health message campaign and more likely to meet PA recommendations. These findings were consistent with Ferrara [22] who found those in health-related majors were not more likely to meet the minimum recommendations for daily PA than non-health-related majors. Perhaps this can be explained by an information overload with regards to health and the dimensions of health; hearing about the EIM message within the department did not stand out. At any rate, this is potentially troubling finding and additional examination may be necessary to identify how students in health-related majors identify and process PA messaging.

Limitations

There are several potential limitations that warrant mention with the study. First, data collected for the study was self-reported measures of PA, which could result in inaccurate reporting. Second, the same students were not tracked from year to year to see if awareness of campaign or activity levels increase within the same participant. Third, the cross-sectional design of the study limits the ability to infer a causal relationship to be determined. However, a longitudinal examination of the campaign awareness and PA levels were assessed over a three year period, yielding to increase confidence in the cross-sectional findings.

Conclusions

The evaluation of this EIMA campaign indicated that surrounding students with messages aimed at the importance of PA and prompting increases in PA levels did have a positive impact of the PA levels of these university students. It is noteworthy that no single channel of delivery was superior, suggesting a combination of multiple modalities may be necessary. The results of the study have implications for clinicians and public health officials on the importance of PA messages and modes of delivery. The study has practitioner value in the way in which messages are delivered. The current study provides important information on how programs can be designed for the delivery of PA messages on university campuses.

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Human Subjects

All procedures performed in the study involving human subjects were in agreement with the ethical standards of the University of Colorado – Colorado Springs Institutional Review Board.

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