

Research Article

Enhancing Awareness of Physical Activity Guidelines among Saudi College Students: The 150 Minutes Program

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Objective. This study evaluates the effectiveness of the “150 Minutes Program” in increasing awareness and fostering positive behavior changes regarding recommended physical activity guidelines among Saudi college students. Initiated as part of the national “Sports for All Challenge,” this program targets college students to improve their understanding of the U.S. Department of Health and Human Services’ physical activity guidelines. **Methods.** Engaging over 250 Saudi college students from 17 student groups across the United States, the program employs two intervention strategies: a general awareness campaign and the application of physical activity guidelines tailored to the Saudi student community. The study assesses the program’s impact through pre-/post-surveys, evaluating changes in participants’ awareness levels and physical activity behaviors. **Results.** A total of 110 participants completed either the presurvey ($n = 35$) or postsurvey ($n = 75$). Results indicate a significant rise in participants’ awareness of recommended physical activity guidelines, increasing from an initial 4% to 22.9%. Postprogram surveys reveal positive shifts in physical activity behaviors, with 51.4% of participants meeting adult physical activity guidelines, compared to 40% before the program. The average physical activity levels also demonstrated an increase. **Conclusion.** The 150 Minutes Program proves effective not only in enhancing awareness but also in instigating positive physical activity behavior changes among Saudi college students. The study contributes valuable insights to the evolving landscape of physical activity interventions within college populations, emphasizing the need for targeted programs, and collaborations with student organizations to ensure sustained impact and scalability.

1. Introduction

College life introduces students to diverse physical activities, playing a crucial role in shaping their health [1]. Moreover, weight gain among college students is often associated with reduced physical activity rather than an increase in energy intake [2]. Weight-related behavioral patterns, including dietary and physical behaviors, undergo substantial changes during this transition, with regular physical activity in college correlating positively with lifelong maintenance of such behaviors [1, 3–8].

Multiple patterns emerged from the wide range of outcome measures relating to college students’ physical activity. First, researchers reported a significant decline in physical activity participation (i.e., decrease in walking, moderate, and vigorous physical activity) and an increase in sedentary behavior during the college years [2, 5, 9–11]. Second,

researchers also reported that college students’ physical activity tends to deteriorate over time [5]. Finally, college students are more active on weekdays than on the weekends, making their physical activity trends uniquely different than the overall adult population [12].

Educational institutions possess the potential to foster healthier lifestyles through interventions promoting physical activity. Previous research explores the impact of interventions on physical activity behaviors among college students, often utilizing diverse methods, including lectures and online platforms [13–17]. These intervention programs used a wide range of methods to accomplish their goals that focused on improving total, moderate, and vigorous physical activity.

Additionally, researchers have reported that positive physical activity outcomes are more observed in interventions that are embedded within college courses [13, 18]. Thus, students within the college setting are ideal targets for lifestyle interventions

aimed at improving health behaviors [18, 19]. Physical activity intervention programs are needed to help promote positive physical activity behaviors among college students [13–17]. Recognizing the significance of such interventions, the “150 Minutes Program” emerges as a health intervention aimed at increasing awareness of recommended physical activity guidelines among Saudi college students

The Office of Disease Prevention and Health Promotion (ODPHP), U.S. Department of Health and Human Services (HHS) presented important physical activity guidelines for adults that can improve their overall health status. The reports highlight specific guidelines for different age groups including children, adolescents, adults, and older adults. For substantial health benefits, adults need to perform 150 min each week of moderate-intensity aerobic physical activity (e.g., brisk walking) or 75 min each week of vigorous-intensity aerobic physical activity (e.g., jogging or swimming) [20]. The guidelines also state that when engaging in aerobic physical activity, individuals need to perform them in episodes of at least 10 min that are spread out throughout the week. Finally, adults should perform muscle-strengthening activities (e.g., push-ups, sit-ups, and squats) that work all major muscle groups (e.g. legs, hips, back, abdomen, chest, shoulders, and arms) 2 days per week for 30 min [20]. These guidelines are consistent with the physical activity objectives for Healthy People 2020 [21].

The “150 Minutes Program” is a physical activity health intervention developed and implemented by students [22]. A poster presentation has previously been published in the American Public Health Associations’ 2020 Virtual Annual Meeting and Expo that discussed the 150 Minutes Program [23]. The aim of the program is to increase awareness of the recommended physical activity guidelines needed to achieve a healthy lifestyle among college students. Additionally, the program aimed to develop inclusive activities that help to achieve the physical activity guidelines that are tailored to the Saudi student community. This program was part of the “Sports for All Challenge,” which is a national Saudi initiative designed to increase the number of individuals who exercise at least once a week from 13% of the population to 40% by 2030.

This program, aligned with the “Sports for All Challenge,” targets students to bridge the awareness gap and enhance adherence to the U.S. Department of Health and Human Services’ physical activity guidelines. By involving student groups, the program develops activities tailored to the Saudi community, incorporating both general awareness campaigns and specific physical activities. The rationale behind targeting college students stems from their unique patterns of physical activity, making them ideal candidates for health behavior interventions.

This paper delves into the outcomes of the 150 Minutes Program, assessing its impact on participants’ awareness levels and physical activity behaviors. The evaluation encompasses pre-/post-surveys, offering insights into the effectiveness of the program in promoting positive behavior changes. The study’s findings contribute to the broader understanding of physical activity interventions within college settings,

shedding light on the importance of tailored programs, and community engagement for fostering lasting health behavior changes.

2. Methods

2.1. Study Procedures. Recruitment of Saudi college students and student groups across the United States took place from August to December 2019 via email using the Saudi Cultural Mission’s listserv of registered Saudi students and student groups in the United States. This study received approval from the Southern Illinois University-Carbondale Human Subjects Committee (Assurance number: 00005334). Then, participating Saudi student groups were asked to register in a web portal that was created by program planners, which included student registration forms, presurvey, program information and instructions, and postsurvey. The web portal aimed to help Saudi student groups with student registration and dissemination of information, which included detailed instructions about program implementation and pre-/post-surveys to assess the impact of the program. Additionally, participating student groups had direct contact with the program planners to guide them in the process of implementing the interventions of the program. Inclusion criteria for this study encompassed all Saudi college students in the United States who participated in the 150 Minutes Program. The exclusion criteria for this study were participants who did not complete the study surveys and non-Saudi college students.

2.2. Procedures for Participating Saudi Student Clubs. Following receiving an email invitation from the program planners, participating Saudi student clubs were required to follow the detailed steps of the program that included: Step 1: Registering in the 150 Minutes Program web portal. Step 2: Form a program planning group (i.e., 5–8 students that will volunteer to help in implementing this program). Step 3: Sending out the program presurvey to all of the local Saudi student community at their campus. Step 4: Sending out the social media messages that were provided by 150 Minutes Program web portal, which are tailored to the importance of physical activity among students. The social media messages were sent through the social media platforms that were affiliated to the Saudi student clubs.

Step 5: Program planners from the participating Saudi student clubs organized activities that help to achieve the physical activity guidelines and are specifically tailored to the local Saudi community. These activities included any form of physical activity and exercise engagement such as soccer, volleyball, and marathons. For example, program planners organized a 50-min 3 days a week get together for physical activity that motivated participants to engage in healthy physical activity behaviors and aligned with the social media awareness campaign. Step 6: Send out the program postsurvey to all of the local Saudi student community to assess the impact of the program. Saudi student clubs that participated in this program were awarded certificates of acknowledgment for their efforts and t-shirts with the 150 Minutes Program logo to give out as incentives for participants.

2.3. Intervention Strategies. The 150 Minutes Program used two intervention strategies that support positive physical activity behavior change. These intervention strategies aim to help participants in improving their weekly physical activity behaviors.

2.4. The 150 Minutes General Awareness Campaign “150 Min per Week to Be Healthy”. This intervention aimed to increase the awareness of Saudi college students of the recommended physical activity guidelines that can improve their physical activity behaviors. Thus, the guidelines were distributed among Saudi students and their family members to help them increase their awareness of healthy physical activity habits. This information was conveyed through social media platforms (e.g., Twitter, Instagram, Facebook, WhatsApp, and YouTube) and the email listserv of participating Saudi Student groups. The main message that this awareness campaign aimed to convey is that adults need at least 150 min of moderate-intensity physical activity per week and should perform muscle-strengthening exercises on 2 or more days each week for 15 min.

2.5. Applying the Physical Activity Guidelines. This intervention aimed to develop activities tailored to the local Saudi community to help achieve the physical activity guidelines. Program planners organized 50-min 3 days a week get together for physical activity that motivated participants to engage in healthy physical activity behaviors and aligned with the 150 min General Awareness Campaign. Moreover, this program helped to build inclusive sports groups and enhance participation in already existing community sports groups (e.g., soccer, volleyball, and women sport groups).

2.6. Evaluation Measures. To evaluate the effectiveness and success of this program, students were asked to complete a survey at the beginning and at the end of the program. The survey includes questions that measure awareness of physical activity guidelines. Additionally, the survey also used the seven-item International Physical Activity Questionnaire-short form (IPAQ-SF) to measure participants’ physical activity behaviors, which was developed by the International Consensus Group for the Development of an International Physical Activity Questionnaire [24]. The questionnaire help to form a physical activity profile for participants and categorized their physical activity behaviors according to their metabolic equivalent of task (MET) min/week count into three levels of physical activity (i.e., inactive, minimally active, or healthy physical activity). The survey was conducted in English. The IPAQ-SF has been called the “gold standard” physical activity performance-based measure, in diverse socioeconomic groups worldwide, and the most appropriate physical activity outcome measure for clinical and research use [25]. Additionally, the items for the questionnaire have been validated in previous research in similar populations [26].

First, measurements were collected at baseline before the start of the program by sending out a presurvey to all of the participants. Then students were asked to complete a post-survey at the end of the program. The questionnaires were

TABLE 1: Demographic characteristics of study participants ($N=110$).

Demographics	Presurvey		Postsurvey		Total	
	Count	Percent	Count	Percent	Count	Percent
Gender						
Female	13	37.1	34	45.3	47	42.7
Male	22	62.9	41	54.6	63	57.3
Total	35	100	75	100	110	100

then analyzed to assess if the intervention changed the participants’ awareness of physical activity guidelines and their pattern of physical activity behavior, which will evaluate the effectiveness of the program. Statistical Package for the Social Sciences (SPSS[®]25) was used to analyze the data.

3. Results

3.1. Participant Characteristics. Over 250 Saudi college students participated in the program, with 110 completing either the presurvey ($n=35$) or postsurvey ($n=75$). The students were from 17 Saudi student groups across the United States. The mean age of participants was 27 years ($SD=5.26$), with 57.3% of the participants being male. Details regarding participant characteristics in this study are presented in Table 1.

3.2. Precampaign Survey Results. A total of 99 participants responded to the presurvey, of which 75 surveys were complete. The findings from the presurvey indicated that 4% of the participants were aware of the recommended physical activity guidelines for adults. The average time that participants assumed is needed for exercise was 373 min per week which is more than double the general recommendations. Additionally, the presurvey result showed that participants’ average physical activity count was 3,978.12 MET min/week MET. Finally, the results showed that only 40% of participants met the physical activity guidelines for adults.

3.3. Postcampaign Survey Results. A total of 42 participants responded to the postsurvey, of which 35 were completed. Postsurvey findings indicated that 22.9% of participants were aware of the recommended physical activity guidelines for adults. Additionally, the postsurvey results indicated that 51.4% of participants met the physical activity guidelines for adults. Participants’ average physical activity levels based on their MET min/week count increased from 3,978.12 MET min/week (presurvey) to 5,622.93 MET min/week (postsurvey). Details on the distribution of participants’ pre-/post-campaign survey results regarding their physical activity levels based on MET min/week (i.e., inactive, minimally active, and healthy physical activity) are presented in Table 2.

3.4. Pre- vs. Post-Campaign Survey Results. A χ^2 test of independence was performed to examine the relation between the distribution of participants’ pre-/post-campaign survey results regarding their physical activity status (i.e., inactive, minimally active, and healthy physical activity). The relation between these variables was significant, $\chi^2(4, N=110)=7.07, p=.0029$. Participants in the postcampaign survey

TABLE 2: Distribution of participants' PA levels based on MET* level (pre- vs. post-survey).

Variables	Physical activity level (presurvey)			Physical activity level (postsurvey)		
	Frequency	Percent	Cumulative percent	Frequency	Percent	Cumulative percent
Inactive	14	18.67	18.67	2	5.71	5.71
Minimally active	31	41.33	60	10	28.57	34.28
Healthy physical activity	30	40	100	23	65.72	100
Total	75	100.0		35	100.0	
Mean PA MET* min/week count		3,978.12			5,622.93	

Note. *The metabolic equivalent of task (MET) is a unit useful for describing the energy expenditure of a specific activity.

TABLE 3: Crosstabulation of participants' pre- vs. post-physical activity status.

Variable	Physical activity levels		χ^2	ϕ
	Pre	Post		
Inactive	14 (0.88)	2 (1.88)	7.07	0.0029*
Minimally active	31 (0.33)	10 (0.71)		
Healthy physical activity	30 (0.04)	23 (2.23)		

Note. * $p < 0.05$.

were more likely than participants in the precampaign survey to be more physically active. Table 3 provides details on the crosstabulation of participants' pre-/post-campaign survey results regarding their physical activity levels based on MET min/week (i.e., inactive, minimally active, and healthy physical activity).

4. Discussion

The comprehensive analysis of the study results provides valuable insights into the effectiveness of the 150 Minutes Program in promoting awareness and positive behavior change regarding physical activity among Saudi college students. The following sections delve into a nuanced interpretation of the findings, explore potential mechanisms influencing behavior change, and relate these results to existing literature.

4.1. Increased Awareness and Behavior Change. The postsurvey results revealed a noteworthy improvement in participants' awareness of recommended physical activity guidelines, rising from 4% to 22.9%. This positive shift aligns with the program's primary objective of enhancing awareness among Saudi college students. Moreover, the observed increase in the number of participants meeting adult physical activity guidelines and the improvement in average physical activity behavior underscores the program's impact on actual behavior change.

4.2. Potential Mechanisms Influencing Behavior Change. Several factors may have contributed to the observed positive behavior change. First, the program's awareness campaign, disseminated through diverse platforms such as social media, aimed to educate participants about the recommended guidelines. The emphasis on the "150 min per week to be

healthy" message likely played a pivotal role in shaping participants' perceptions and motivating them toward increased physical activity. Second, the intervention strategies, particularly the inclusive physical activities tailored to the local Saudi community, may have created a supportive environment for behavior change. Engaging students in activities such as soccer, volleyball, and marathons not only aligned with the guidelines but also fostered a sense of community and enjoyment, potentially reinforcing sustained engagement in physical activity.

4.3. Comparison with Existing Literature. The pre-post-survey findings in this study underscore the effectiveness of the 150 Minutes Program in promoting awareness and positive behavior change among Saudi college students regarding recommended physical activity guidelines. Before the program implementation, participants demonstrated a lack of awareness, with only 4% familiar with the guidelines. This aligns with existing literature highlighting the challenge of maintaining adequate physical activity levels among college students [1, 2, 27].

The significant increase in awareness from 4% to 22.9% postprogram reflects the successful dissemination of information through the 150 Minutes Program's general awareness campaign. Social media platforms, such as Twitter, Instagram, Facebook, WhatsApp, and YouTube, played a pivotal role in reaching and engaging the target audience. These findings resonate with studies emphasizing the efficacy of social media-based interventions in promoting physical activity among college students [13, 14, 28].

Moreover, the program's targeted activities tailored to the Saudi student community, such as soccer, volleyball, and marathons, contributed to a positive shift in participants' physical activity behaviors. This aligns with previous research indicating that interventions embedded within the college setting, especially those incorporating physical activities, tend to yield positive outcomes [16, 18, 29]. The emphasis on inclusive sports groups and involvement in existing community sports groups further strengthened the impact of the program.

The postcampaign survey results indicate a notable increase in the number of participants meeting adult physical activity guidelines, rising from 40% to 51.4%, which is higher than the findings of the American College Health Associations' study (46.2%) among US college students [30]. This surpasses the baseline and reflects a substantial positive behavior change. The average physical activity levels, measured in MET

min/week, also witnessed an encouraging increase from 3,978.12 to 5,622.93 MET min/week. These outcomes are consistent with research advocating for lifestyle interventions targeting health behaviors within the college setting [17, 18, 31].

Lastly, the crosstabulation of participants' pre-/post-campaign survey results on their physical activity levels revealed significant results, suggesting that participants in the postcampaign survey were more likely to exhibit increased physical activity compared to those in the precampaign survey. These findings show a positive physical activity behavior change among participants after the implementation of the 150 Minutes Program. These results also are consistent with previous research that reported positive physical activity outcomes in interventions that are embedded within college sitting [13–18, 26].

Comparisons with existing literature reveal similarities in the positive outcomes observed in interventions focusing on physical activity promotion among college students. The engagement of student organizations and the incorporation of tailored physical activities emerge as critical components for success, echoing the importance of community involvement in health promotion initiatives [19, 32]. Thus, college wellness programs should consider developing and promoting programs that aim to increase positive health behaviors in the college setting.

4.4. Implications and Recommendations. The success of the 150 Minutes Program suggests the potential for similar interventions to be integrated into college wellness programs. Collaborations with student organizations and the incorporation of tailored physical activities can enhance the effectiveness of such programs. For future initiatives, program planners should consider addressing barriers to survey participation to ensure robust program evaluation.

4.5. Limitations and Areas for Future Research. While the study provides valuable insights, some limitations should be acknowledged. The voluntary nature of participation and the lower-than-expected response rate for pre-/post-surveys may introduce selection bias. Future research should explore strategies to enhance survey participation and further investigate the long-term sustainability and scalability of similar interventions across diverse age groups and communities. Finally, recall bias is another potential limitation. The study survey asked participants to recall their exercise habits for the last week, and thus it is possible some participants may have inflated/misrepresented their actual physical activity behaviors.

5. Conclusions

In conclusion, the detailed analysis of the 150 Minutes Program's impact on Saudi college students underscores its effectiveness in increasing awareness and promoting positive behavior change. By understanding the mechanisms at play and aligning these findings with existing literature, this study contributes to the growing body of knowledge on physical activity interventions among college populations.

The 150 Minutes Program successfully engaged over 250 Saudi college students from 17 Saudi student groups across

the United States. In summary, the results of the program's pre-/post-survey evaluation indicate a positive change in physical activity behavior among participants following the implementation of the 150 Minutes Program. To ensure the sustainability and success of this program and similar initiatives, collaboration with various student organizations focusing on student health and physical activity, such as schools and universities, is critical. Finally, to scale and expand this program successfully, planners should broaden their target audience to encompass all age groups and communities, including children, the elderly, and families.

Data Availability

Data supporting this research article are available upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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