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Predicting physical activity engagement among college students: A logistic regression analysis of lifestyle influences

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ABSTRACT

This research aimed to create a model that could predict how likely college students are to participate in physical activities (PA) using a method called logistic regression analysis. The study collected data from 1,118 students at the largest private university in Mindanao, Philippines, through a survey called the physical activity engagement survey (PAES). An analysis of the students' backgrounds found that most of them were single, did not have jobs, were female, and did not have children. The study also looked at the students' lifestyles and found many did not have a family history of illness but did consume a lot of junk food and alcohol and did not often walk from home to school. The analysis using logistic regression found important factors that could predict if students would take part in PA. It was discovered that male students were more likely to be active than female students. Surprisingly, students studying degrees that required physical effort and those who had jobs were less likely to be active. On the other hand, students who had a strong interest in PA and knew its benefits were more likely to be active. The model was able to correctly identify whether 72.9% of the students were active or not. Additionally, it was noted that students often ate out, consuming a lot of burgers, fried foods, sweets, and sugary drinks. The study also looked at how students viewed their physical education (PE) classes, their own fitness levels, and how effective they thought their PE teachers and facilities were. Overall, students had a positive view but also pointed out some areas that could be better. This detailed analysis shows that many different factors, like background, lifestyle, and perceptions, play a role in whether college students are likely to engage in PA. The findings suggest that efforts to encourage PA among students should be tailored to address these diverse factors.

1. Introduction

In the contemporary landscape of higher education, the declining engagement of college students in physical activities (PAs) presents a significant challenge that necessitates immediate attention from health professionals and educators alike (Quartiroli and Maeda, 2014; Wunsch et al., 2021; Boulton et al., 2019). The escalating prevalence of physical inactivity among this demographic is not just a matter of concern but a clarion call for actionable strategies to reverse this trend (Gao, 2009; Keating et al., 2005; Brown et al., 2024; Zhang et al., 2022). Recognized as one of the six priority health risk behaviors by public health authorities, physical inactivity in college populations has reached alarming levels, with an increasing number of students succumbing to sedentary lifestyles, thereby exacerbating the risk of chronic diseases and mental health issues (Cecchini et al., 2010; Trost et al., 2002; Egli et al., 2011).

The importance of establishing positive PA behaviors during the formative college years is paramount, given the potential for these habits to influence lifelong health and well-being (Sa et al., 2016; Niekerk and Barnard, 2011; Strong et al., 2005; Biddle et al., 2004). This critical period of transition to adulthood is fraught with challenges, including academic pressures, social changes, and the onset of adult responsibilities, which can collectively impede the adoption of active lifestyles (Torres, 2003). Despite a burgeoning awareness of

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the benefits of a healthy lifestyle and fitness, the lure of sedentary behaviors remains strong, underscoring the need for targeted interventions to promote PA among college students (Lian et al., 2016; Sexton, 2015; Buckworth and Nigg, 2004).

The role of universities in this endeavor cannot be overstated. As institutions committed to the holistic development of their students, universities are uniquely positioned to implement comprehensive programs and policies that not only educate students about the benefits of PA but also actively facilitate their engagement in regular physical exercise. This involves creating an environment that not only provides the necessary facilities and resources but also fosters a culture that values and prioritizes physical well-being. Given the urgent need to combat sedentary lifestyles, higher education institutions serve as critical platforms for the implementation of effective strategies to promote PA. Understanding the multifaceted nature of PA engagement among college students, including its characteristics, determinants, and consequences, is essential for the development of programs that are not only engaging but also sustainable in the long term. By identifying the key predictors of PA engagement, educational policymakers, and administrators can devise evidence-based policies and initiatives that encourage active lifestyles, thereby contributing to the overall health and wellness of the student population.

Despite the extensive body of literature on PA and its myriad benefits, there remains a notable gap in research that comprehensively examines the various factors influencing PA engagement among college students, particularly within the Philippine context. This study seeks to bridge this gap by exploring the complex interplay of demographic, lifestyle, physical education-related, and PA-related variables in shaping students' engagement in PA. Specifically, this research aims to (1) characterize college students based on a wide array of relevant variables, (2) assess the overall PA engagement within this population, and (3) identify the most significant predictors of PA engagement among college students.

Hypothesis: None of the demographic, lifestyle, curricular, and physical activity-related variables significantly predict the physical activity engagement of Filipino college students.

By achieving these objectives, this study aims to contribute valuable insights to the existing body of knowledge and stimulate further research in this area. Ultimately, the findings of this research are intended to inform the development of targeted strategies and interventions that can effectively increase PA engagement among college students, fostering a culture of health and wellness within higher education institutions. This endeavor is crucial for addressing the pressing issue of physical inactivity among college students and paving the way for a healthier, more active generation of young adults.

2. Method

2.1. Research design

The study used a quantitative research design, employing descriptive and predictive research approaches. A quantitative research design was chosen for its ability to objectively measure and analyze variables related to physical activity engagement among college students, which aligns with the research objectives of characterizing student demographics, assessing physical activity levels, and identifying predictors of engagement. This approach allows for the statistical analysis of data collected from a large sample, providing a robust basis for generalizations and inferences about the target population (Williams, 2007). Furthermore, the use of quantitative methods facilitates the examination of relationships between variables, which is crucial for understanding the complex factors influencing physical activity engagement in the college student population.

2.2. Measure

The study utilized an online survey using a research instrument entitled the Physical Activity Engagement Survey (PAES), which was purposively made for this research. The PAES comprises three parts with several questions asking for college students' demographic information, lifestyle-related information, and information on physical activities at school.

The PAES was meticulously developed through a comprehensive review of existing literature and validated instruments in the field of physical activity and health sciences to ensure content relevance and comprehensiveness. The survey underwent a rigorous validation process, including five (5) expert reviews from professionals in physical education (PE) and health education, to refine the questions for clarity, relevance, and sensitivity to the nuances of physical activity behaviors among college students. Pilot testing was conducted with a small subset of the target population to assess the reliability and validity of the survey items, leading to further refinements to enhance the accuracy and interpretability of the responses.

2.3. Data collection

The recruitment of participants for the Physical Activity Engagement Survey (PAES) was carried out strategically using a purposive sampling technique, specifically targeting college students from various campuses of the University of Mindanao (UM). The recruitment process was made possible using the online student portal, embedding the link in the Surveys tab, which can be easily spotted via the

notification button. Invitations to take part in the online survey were shared within a specific period to allow more participants to respond to the survey. This method guaranteed a convenient and effective way to reach a wide range of students while also ensuring that the sample remained inclusive. Meanwhile, the decision to choose UM as the study site was deliberate due to its varied student population that encompasses a broad spectrum of socio-economic backgrounds, academic disciplines, and lifestyle behaviors. This diversity is crucial for comprehending the complex nature of college students' involvement in physical activity. The emphasis on UM campuses offered a suitable environment for examining PA behaviors, considering the university's distinct cultural and institutional traits.

After approval from the technical panel, the researchers exported the survey instrument to Google Forms. An online survey link was generated to ensure faster completion and immediate collation of survey responses. An online survey is also advantageous as the researchers did not travel to different UM campuses to get the necessary data. The survey link was up from August 6 and was closed on October 16, 2018. Of the 1200 respondents who were expected to participate, 1,118 students successfully accessed the Google Forms link. Of this number, 17 ticked 'No' even if some of them completed the survey. They were still removed from the dataset. Five respondents were still 17 years old; they were removed from the analysis as well. There were 1,096 valid responses, meaning the valid response rate is 98.03%. Meanwhile, missing data in the Physical Activity Engagement Survey (PAES) primarily arose from non-responses and incomplete survey submissions, reflecting challenges in participant engagement and survey completion. To address this, missing values were imputed with the variables' respective mean and mode using a multiple imputation technique, ensuring a robust statistical approach that preserves the integrity and representativeness of the dataset, thereby minimizing bias in the subsequent analyses. The respondents were also asked to rate the actual response to the survey and the instrument, wherein the overall rating was very high (4.37) on a five-point scale.

2.4. Data analysis

In the data analysis, descriptive statistics were used: mean and standard deviation were utilized to determine the central tendency and variation of scale variables (i.e., continuous data). In contrast, the relative frequency was used to account for the distribution of college students as categorical indicators in each variable. In this study, Likert-scored items are treated as scaled variables. Logit analysis was implemented using a binary logistic regression procedure to identify which variables are significant predictors of physical activity engagement (denoted by a dichotomous response). The odds ratio was also computed in this analysis to be displayed as exponentiated betas in the LR table. All inferences are made at a 95% confidence interval. We used IBM-SPSS version 20 in all statistical analyses.

3. Results

Table 1 shows the demographic breakdown of college students from all University of Michigan (UM) campuses. The data were collected through a Google Form survey link shared by the researchers. According to the analysis, 62.2% of the respondents were female. The majority of these students were single (94.5%) and reported not having any children (90.3%) at the time of the survey. Additionally, 72.3% of the students were not employed when they participated in the survey.

Table 1: Distribution of college students according to demographic segments (N=1096)

Demographic variables	*f*	%
Sex		
Male	414	37.8
Female	682	62.2
Civil status		
Single	1036	94.5
Married	46	4.2
Widow/widower	14	1.3
Have child?		
No	990	90.3
Yes	106	9.7
Working		
No	792	72.3
Yes	304	27.7

Table 2 outlines the lifestyle-related responses of the college students surveyed. Although 81.1% of the students indicated, they have no familial history of illnesses, a significant portion reported such histories, particularly diseases like diabetes, asthma, and cancer from their fathers' side, and hypertension, diabetes, and heart diseases from their mothers' side.

Additionally, 6.2% of the students reported having overweight fathers, while 7.8% reported overweight mothers. About 21% of the students regularly walked to school, citing close proximity to their homes as the reason for not needing public transport or personal vehicles. Moreover, 65.7% of the students acknowledged that their academic programs demanded physical activity beyond standard PE classes, incorporating regular physical movement into the curriculum.

The survey also found low rates of smoking among students (6.9%) but higher consumption of alcoholic beverages, with 40.2% of students drinking beer or liquor. A significant majority (79.4%) reported consuming junk food.

Table 3 displays additional demographic and exercise-related statistics for the college students surveyed. The average age of the respondents is 21.17 years, with an SD of 3.14 years. On average, students weigh 55.36 kilograms, with a standard deviation of 12.7 kilograms. They spend about 4.40 hours per day on social media platforms such as

Facebook, Messenger, Twitter, and Instagram, with a standard deviation of 2.957 hours. Additionally, they spend 3.03 hours per day watching TV or playing video games, with a standard deviation of 2.457 hours. Students who engage in exercise reported spending an average of 7.49 hours per week on this activity, with a standard deviation of 8.217 hours.

Table 2: Distribution of college students according to lifestyle questions (N=1096)

Demographic variables	f	%
History of sickness in the family		
No	889	81.1
Yes	207	18.9
Having an overweight father		
No	1028	93.8
Yes	68	6.2
Having an overweight mother		
No	1010	92.2
Yes	86	7.8
Smoking habits		
No	1020	93.1
Yes	76	6.9
Drinking alcohol		
No	655	59.8
Yes	441	40.2
Eating junk foods		
No	226	20.6
Yes	870	79.4
Walking from home to school		
No	866	79.0
Yes	230	21.0
Degree requires physical effort		
No	376	34.3
Yes	720	65.7

Table 3: Descriptive statistics results for demographic and exercise-related variables

	N	Mean	SD
Age in years	1096	21.17	3.140
Weight in kilograms	1096	55.36	12.700
Hours of using social media	1096	4.40	2.957
Hours of watching TV/playing video games	1096	3.03	2.457
Hours spent in exercising per week	764	7.49	8.217

Table 4 outlines the frequency of lifestyle-related consumption habits among college students. The data includes how often students eat out, as well as their average weekly consumption of various food and drink items. The findings indicate that college students eat out approximately three times a week (mean = 2.90, SD = 1.511). Additionally, on average, students consume burgers 2.15 times per week, fried foods 2.96 times, sweets 2.94 times, baked goods 2.51 times, soft drinks 2.75 times, and sweetened beverages 2.87 times per week.

Table 4: Extent of lifestyle-related consumption patterns among college students (N=1096)

	Mean	SD
Frequency of eating out in a week	2.90	1.511
Eating burgers in a week	2.15	0.855
Eating fried food in a week	2.96	1.121
Eating sweets in a week	2.94	1.105
Eating baked foodstuffs in a week	2.51	1.000
Drinking soda in a week	2.75	1.179
Drinking sweetened beverages in a week	2.87	1.245

Table 5 provides summary statistics on PE-related aspects as evaluated by college students using a Likert-type scale. The students rated various elements, including the effectiveness of PE facilities, the accessibility of these facilities, the quality of PE teachers, and their own fitness levels for attending PE classes. On average, the students rated the overall conduct of their PE classes as very good (mean = 3.84, SD = 1.030). They similarly rated their fitness status favorably (mean = 3.86, SD = 0.979). The assessments for their PE teachers (mean = 3.89, SD = 0.979), the PE class facilities (mean = 3.63, SD = 1.016), and access to these facilities (mean = 3.43, SD = 1.061) were also generally positive. Overall, the motivation of the students to attend PE classes was high, as reflected in their very good assessment ratings (mean = 3.86, SD = 1.034).

Table 5: Descriptive statistics results for PE-related questions

	Mean	SD
Evaluation of PE class	3.84	1.030
Fitness to attend PE class	3.86	.979
Evaluation of teachers in PE class	3.89	.979
Evaluation of facilities in PE class	3.63	1.016
Access to facilities in PE class	3.43	1.061
Motivation to attend PE class	3.86	1.034

Excellent: 4.20-5.00; Very good: 3.40-4.19; Good: 2.60-3.39; Fair: 1.80-2.59; Poor: 1.00-1.79

Table 6 presents summary statistics for PA-related responses from college students, assessed using a Likert-type scale. The results indicate that students generally show a favorable level of interest in engaging in physical activities and display positive behaviors towards sweating during these activities. Additionally, students express a very favorable attitude towards the benefits they perceive from participating in physical activities.

Table 6: Descriptive statistics results for PA-related questions

	Mean	SD
Interest in doing PA	3.42	1.021
Behavior towards sweating	3.93	.942
Perceived benefits of doing PA	4.29	.844

Excellent: 4.20-5.00; Very good: 3.40-4.19; Good: 2.60-3.39; Fair: 1.80-2.59; Poor: 1.00-1.79

Table 7 outlines the distribution of physical exercise and mobility efforts among college students. The analysis shows that 69.7% of the students engage in physical exercises, whereas 30.3% do not participate in such activities. Among those who currently do not exercise, 87% are considering starting to exercise in the future, while 13% have no plans to engage in exercise activities.

Table 7: Distribution of college students according to exercise/physical mobility

Demographic Variables	f	%
Do you exercise		
No	332	30.3
Yes	764	69.7
Consider exercising in the future		
No	43	13.0
Yes	289	87.0

Tables 8 and 9 display the results from a binary logistic regression analysis used to predict physical

activity engagement among college students. Binary logistic regression is a statistical method that estimates the probability of a binary outcome based on one or more predictor variables, which can be either continuous or categorical. In this study, the binary outcome was whether students engaged in exercise. The logistic regression model was statistically significant, with a chi-square value of 175.808 and a p-value less than 0.05. The model explained 21% of the variance in physical activity engagement (Nagelkerke R2) and was able to correctly classify 72.9% of the students in terms of their exercise engagement.

Table 8: The accuracy of the model in predicting college students who will exercise based on predictor variables

Observed		Predicted		
		Exercise		Percentage correct
		No	Yes	
Exercise	No	101	231	30.4
	Yes	66	698	91.4
Overall percentage				72.9

Examining the logistic regression model, several factors were considered, such as age, gender, marital status, parental weight status, employment, dietary habits, media consumption, and perceptions regarding PE classes. From these, several important predictors were identified, each providing valuable information about the factors that impact students' propensity to participate in physical activities. The model revealed that gender was a significant predictor, with male students being considerably more inclined to participate in physical activity compared to female students. This was supported by an odds ratio (Exp(B)) of 2.812 (p<.001). This indicates that the likelihood of participating in physical activity is approximately 2.8 times higher for males compared to females. This discovery is consistent with previous research that frequently indicates elevated levels of physical activity among males, potentially attributable to cultural, social, or biological influences that promote or enable more vigorous lifestyles in men.

The study found that employment status was a significant factor, indicating that working students were less likely to participate in physical activity. This was supported by an odds ratio of .527 (p<.001). This suggests that being employed decreases the likelihood of participating in physical activity by around 47%, possibly because of time limitations or increased tiredness resulting from managing work and academic responsibilities. Furthermore, a noteworthy factor that influenced the outcome was whether a student's academic program required physical effort, as indicated by an odds ratio of .588 (p=.001). This counterintuitive discovery suggests that students who are believed to have degrees that involve physical exertion are less inclined to participate in extra physical activities, with the likelihood decreasing by approximately 41%. This implies that students in physically demanding programs may view their academic responsibilities as enough physical effort, leading to a decrease in their involvement in extracurricular physical activities.

The level of interest in participating in physical activity was a strong predictor of engagement, as indicated by an odds ratio of 1.447 (p<.001). This suggests that students who have a greater inclination towards physical activity have an approximately 44.7% higher probability of participating in it. This highlights the significance of internal motivation and individual interest in promoting engagement in physical activities. Likewise, the observed advantages of engaging in physical activity were a notable predictor, with an odds ratio of 1.253 (p=.038). This indicates that students who acknowledge the advantages of physical activity have a roughly 25.3% higher probability of engaging in it, underscoring the significance of perceived value and awareness in encouraging active behaviors.

4. Discussion

The discussion around gender disparities in physical activity engagement among college students, as highlighted by our study, adds a nuanced layer to the existing body of research (Armstrong et al., 2018; Telford et al., 2016; Lenhart et al., 2012; Ridgers and Stratton, 2005). These disparities are not merely statistical but are deeply rooted in social, cultural, and physiological factors that influence behavior and preferences. The findings that males are twice as likely to engage in physical activities compared to females underscore the pervasive influence of societal norms that traditionally associate physical strength and endurance with masculinity, thereby implicitly discouraging female participation. This gender gap in physical activity highlights a broader issue within the societal structure that extends beyond mere personal choice and delves into the realms of gender roles and expectations. The physical robustness attributed to males and the relatively lighter household responsibilities expected of females, as outlined by these studies, suggest a complex interplay of societal norms and physical capability in shaping physical activity engagement. This insight beckons a reevaluation of how physical activity programs are structured and promoted, ensuring they are inclusive and tailored to bridge this gender gap effectively.

Furthermore, our study sheds light on the impact of curriculum design on physical activity engagement, particularly highlighting that students who perceive their programs as physically demanding are more likely to engage in regular physical activities. This is corroborated by findings from Curry et al. (2015), who noted increased physical exercise among students majoring in sports or PE due to curriculum requirements. The role of structured PE programs, as evidenced by their ability to enhance health-related fitness knowledge (Hensley, 2000) and improve overall fitness and body mass index (Kohl and Cook, 2013), cannot be

overstated. These programs serve not just as educational tools but as vital components in fostering a culture of physical activity, illustrating the critical role of educational institutions in promoting health and wellness through curriculum design. This underscores the need for academic institutions to not only incorporate physical activity into their curricula but also to ensure these programs are engaging, accessible, and relevant to all students, irrespective of their major.

Table 9: Binary logistic regression showing the entry of all possible predictors of physical activity engagement of college students

	B	SE	Wald	df	Sig.	Exp (B)
Age	-.028	.028	1.037	1	.309	.972
Male	1.034	.188	30.372	1	.000*	2.812
Civil status			3.806	2	.149	
Single	.640	.609	1.106	1	.293	1.897
Married	1.313	.699	3.523	1	.061	3.716
Have child	.064	.309	.043	1	.836	1.066
Weight	.001	.007	.011	1	.916	1.001
Degree requires physical effort	-.530	.154	11.810	1	.001*	.588
History of sickness in the family	-.362	.198	3.340	1	.068	.696
Father overweight	-.277	.324	.730	1	.393	.758
Mother overweight	.144	.266	.291	1	.590	1.154
Working	-.641	.177	13.069	1	.000*	.527
Smoking	.028	.330	.007	1	.932	1.029
Drinks alcohol	.099	.161	.376	1	.540	1.104
Hours of social media use	.027	.026	1.023	1	.312	1.027
Hours of watching TV/playing video games	.010	.032	.108	1	.742	1.010
Frequency of eating out	.007	.051	.018	1	.894	1.007
Eats junk foods	.349	.201	3.008	1	.083	1.418
Eats burgers	-.106	.100	1.130	1	.288	.899
Eating fried foodstuff	-.162	.081	4.001	1	.045*	.851
Eating sweets	-.092	.082	1.253	1	.263	.913
Eating baked foodstuff	.082	.093	.788	1	.375	1.086
Drinking soda/softdrinkss	.029	.073	.156	1	.693	1.029
Drinking sweetened beverage	-.027	.065	.173	1	.678	.973
Evaluation of PE class	-.030	.122	.059	1	.808	.971
Motivation to attend PE class	.161	.125	1.650	1	.199	1.174
Fitness to attend PE class	.147	.106	1.909	1	.167	1.158
Evaluation of teachers in PE class	-.165	.124	1.776	1	.183	.848
Evaluation of facilities in PE class	-.184	.126	2.121	1	.145	.832
Access to facilities in PE class	.110	.110	.995	1	.318	1.116
Walks from home to school	.152	.183	.685	1	.408	1.164
Interest in doing PA	.369	.083	19.959	1	.000*	1.447
Behavior towards sweating	.106	.098	1.162	1	.281	1.111
Perceived benefits of doing PA	.226	.109	4.303	1	.038*	1.253
(Constant)	-.933	1.238	.568	1	.451	.393

-2 log likelihood: 1168.585; Cox and Snell R^2:0.148; Nagelkerke R^2: 0.210

The relationship between dietary habits and physical activity engagement, particularly the negative impact of increased consumption of fried foods, highlights a crucial aspect of college students' lifestyles. As Acampado and Valenzuela (2018) suggested, the stressors associated with college life often lead to comfort eating and the development of unhealthy dietary habits, which, in turn, can deter physical activity engagement. This finding emphasizes the importance of holistic wellness programs that address both nutrition and physical activity, recognizing that dietary habits can significantly influence one's propensity to engage in physical exercises. Institutions should consider interventions that not only promote physical activity but also educate students on the importance of balanced nutrition, potentially mitigating the adverse effects of stress-induced dietary choices.

The significant role of interest in physical activities as a predictor of engagement aligns with the notion that recreational activities, when enjoyed, are more likely to be sustained (Humbert et al., 2006; Scanlan et al., 1993). This highlights the importance of creating physical activity opportunities that are enjoyable, accessible, and varied, ensuring students can find activities that resonate with their interests and preferences. However, the influence of social and environmental factors, such as limited access to affordable physical activity options and the sedentary lure of technology, presents barriers that need to be addressed. Institutions and policymakers must work towards creating environments that facilitate physical activity through infrastructure, programs, and policies that reduce these barriers and make active lifestyles a feasible option for all students.

Lastly, the positive correlation between the perceived benefits of physical activity and the likelihood of engagement underscores the power of perception in motivating behavior. As Warburton and Bredin (2017) and Hagberg et al. (2009) suggested, awareness of the health benefits associated with regular physical activity can significantly influence one's decision to engage in exercise. This finding suggests that educational campaigns and programs that effectively communicate the multifaceted benefits of physical activity—not just for physical health but also for

mental well-being, personal growth, and social connections—can play a pivotal role in encouraging active lifestyles. It highlights the necessity for comprehensive health promotion strategies that go beyond mere access to include education and motivation, enabling individuals to make informed decisions about their health and well-being.

5. Conclusion

The survey conducted among college students unveiled a demographic profile primarily consisting of unmarried, childless women who were unemployed, inclined towards abstaining from smoking and drinking but displayed a proclivity for consuming unhealthy food. This image serves as a context in which their physical activity (PA) behaviors and perceptions can be comprehended. An interesting discovery was the lack of any significant medical history in their families, along with a general unwillingness to walk from home to school, despite many considering their academic programs to be physically challenging.

The average participant, a 21-year-old weighing 55.36 kilograms, was observed to spend a significant amount of time on social media and screen-based entertainment, averaging 4.4 and 3.03 hours, respectively, while devoting 7.5 hours per week to exercise. This indicates an intricate interaction between stationary and physically active behaviors among college students. The individual's consumption habits demonstrated a moderate inclination towards fried and baked foods, burgers, sweets, sodas, and sweetened beverages. These dietary patterns have the potential to impact their engagement in physical activity.

The responses regarding PE were overwhelmingly positive, as students rated their PE classes, fitness levels, facilities, accessibility, teaching quality, and motivation to attend as excellent. Their positive assessment also encompasses their overall disposition towards physical activity, as demonstrated by a strong inclination to participate in PA, a positive perception of perspiration during exercise, and a firm conviction in the health advantages of PA. Although many respondents showed a positive inclination, a notable proportion reported participating in the exercise. Specifically, those who are currently not active expressed a willingness to potentially engage in exercise in the future.

The logistic regression analysis yielded more profound insights into the variables that impact physical activity participation. Curiously, students who were part of programs that were seen as physically challenging were less inclined to participate in extra physical activity, possibly because they considered their academic obligations to be enough physical effort. Factors such as employment and higher consumption of fried foods were found to discourage physical activity participation. This indicates that time limitations, energy levels, and dietary patterns have a substantial impact on influencing physical activity behaviors. On the other hand, a greater interest in physical activity (PA) and acknowledgment of its advantages were linked to higher levels of involvement, highlighting the significance of internal motivation and perceived worth in encouraging active lifestyles.

The model's capacity to precisely forecast PA engagement in 72% of instances underscores the intricate interplay of various factors, encompassing academic demands, employment situation, dietary patterns, and motivational elements. These findings not only enhance our comprehension of physical activity behaviors among college students but also emphasize the necessity for focused interventions that tackle these complex influences. Through the cultivation of conducive environments that facilitate and motivate physical activity, educational institutions can assume a pivotal role in advancing healthier lifestyles among their students, guaranteeing the comprehensive incorporation and realization of the advantages associated with engaging in regular physical exercise in their day-to-day routines.

6. Recommendation

Building on the findings from this study, universities, particularly the University of Mindanao, can take strategic steps to enhance physical activity (PA) engagement among their students. General physical education (GPE) courses provide a critical platform for instilling the importance of PA, and as such, instructors can leverage these insights to develop more engaging and relevant curricula. By incorporating the study's insights into instructional materials and course outlines, GPE instructors can create a more resonant and motivational learning environment. This may include designing activities that align with students' interests and perceived benefits of PA, addressing the gender disparities in engagement by offering a wider variety of activities that appeal to all students, and integrating discussions about the health benefits and practical strategies for integrating PA into daily routines. Additionally, considering the negative association between perceived academic, physical demand and PA engagement, GPE courses could emphasize the distinct benefits and enjoyment derived from PA outside of academic requirements, thereby encouraging students to view PA as a beneficial supplement to their academic and personal lives.

For policymakers and university administrators, the findings underscore the importance of creating a campus environment that promotes and facilitates PA. This could involve improving access to and the quality of fitness facilities, providing more flexible schedules that accommodate PA for working students, and implementing campus-wide health promotion campaigns that educate students about the benefits of PA and how to overcome barriers such as unhealthy dietary habits. Furthermore, considering the impact of social and cultural norms on PA engagement, particularly among females,

universities could initiate programs and campaigns aimed at challenging these norms and encouraging wider participation. Policies could also incentivize participation in PA through academic credits or recognition, creating a more integrated approach to wellness in the academic setting.

Considering the positive influence of interest in PA and perceived benefits on engagement, future research, and interventions should focus on ways to enhance these factors among college students. A potential area for further study could involve focus groups or participatory workshops with students to delve deeper into their attitudes, barriers, and facilitators towards PA. Such qualitative insights could complement the predictive model developed in this study, providing a richer understanding of student needs and preferences. This participatory approach could also involve students in the co-creation of PA programs, ensuring that initiatives are student-centered and more likely to be effective. By fostering a collaborative and inclusive environment for promoting PA, universities can better support their students in leading healthier and more active lives.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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