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Gender-based differences in physical health outcomes due to sedentary lifestyle

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Abstract
The modern era has seen a significant rise in sedentary behavior due to increased reliance on technology, desk-bound occupations, and reduced physical activity. This study aims to investigate the gender-based differences in physical health outcomes associated with a sedentary lifestyle. Utilizing a quantitative research design, data were collected from a sample of 250 adults (125 males and 125 females) aged between 18 and 25 years through structured questionnaires and health assessments. The results indicated that while both genders experience adverse effects from prolonged inactivity, the nature and severity of health issues varied. Males were found to have a higher incidence of cardiovascular problems and obesity, whereas females reported more musculoskeletal discomfort and symptoms related to metabolic disorders. These findings suggest that sedentary lifestyle interventions should be tailored to address gender-specific health risks. The study underscores the importance of incorporating regular physical activity into daily routines and promoting gender-sensitive health awareness programs to mitigate the negative impacts of sedentary behavior.

Keywords: Sedentary lifestyle, gender differences, physical health, obesity, cardiovascular health, metabolic disorders

Introduction
The shift towards technology-driven routines and desk-based occupations has significantly increased sedentary behavior in modern society. A sedentary lifestyle refers to a pattern of behavior characterized by prolonged sitting or low physical activity, commonly observed during screen time, office work, and leisure activities. This lifestyle trend has emerged as a major public health concern due to its strong link with various physical health issues such as obesity, musculoskeletal pain, poor posture, fatigue, and metabolic disorders.

Research indicates that prolonged physical inactivity can lead to serious health consequences, including increased risk of cardiovascular diseases, type 2 diabetes, and chronic body pain. Moreover, sedentary behavior is not limited to a particular age or gender group, but its health impact may vary across genders due to biological and lifestyle differences. Men and women may experience different patterns of health outcomes related to inactivity, possibly influenced by hormonal factors, occupation types, and health behaviors.

Any waking behavior, such as sitting or bending, that involves an energy expenditure of 1.5 metabolic equivalents of task (MET) or less is considered sedentary behavior (Tremblay *et al.* 2010) [1]. Thus, sedentary behavior is defined as those activities which have low expenditure requirements (Tremblay *et al.* 2017) [1]; watching television, playing video games, using a computer, sitting at school or work, and sitting are a few instances of sedentary behavior. One MET is the energy expenditure for a person at rest (Ainsworth *et al.* 2011) [2]. By this proposed measure, sedentary behavior is characterized as being between 1.0 and 1.5 METs, light activity is 1.6-2.9 METs, moderate activity is 3-5.9 METs, and strenuous activity is 6 METs or greater (Newton *et al.* 2013) [3].

Sedentary conduct is a health concern and increases the likelihood of developing a number of diseases. The majority of physical activity instruction provided by health professionals places a greater emphasis on increasing physical activity levels than on decreasing sedentary behavior (Katzmarzyk 2010) [4]. Linked to this, cardiovascular disorders, certain forms of cancer, and type 2 diabetes mellitus are also diseases which appear due to sedentary behavior (Thyfault and Booth 2011) [5], such as sitting time, screen time, and leisure time spent sitting

during the day (Patterson *et al*. 2018) [6]. Lifestyles characterized by inactivity are linked to metabolic dysfunction, including increased plasma triglycerides, low levels of high-density lipoprotein (HDL), and impaired insulin sensitivity (Maciel *et al*. 2022) [14]. Additionally, they harm the health of the vascular system (Onambele-Pearson *et al*. 2019; Park *et al*. 2020) [8, 7].

As a result, both sedentary behavior and physical activity should be considered when assessing the health of the elderly. By reducing sedentary behavior and increasing physical activity, it is possible to improve public health (Garcia Meneguci *et al*. 2021; Niklasson *et al*. 2023) [9, 10]. Considering the importance of physical activity in the aging process, the main purpose of this study was to analyze the status and characteristics of current trends in global publications regarding the influence of sedentary behavior in the elderly.

Understanding these gender-based differences is important to develop targeted health interventions and preventive strategies. While men may be more prone to weight gain and heart-related conditions due to prolonged sitting, women may be more vulnerable to joint stiffness, fatigue, or back pain. The present study aims to explore and compare the physical health outcomes of sedentary lifestyles among male and female participants, contributing to a more gender-sensitive approach in public health research.

Review literature

Ferrando-Terradez, I., *et al*. (2025) [11]. This study explored how psychological empowerment and enjoyment of physical activity influenced changes in physical activity levels, sleep quality, and muscular endurance among inactive young women participating in a six-month HIIT program delivered via a smartphone app. Sixty-one participants were assessed using standardized tools for physical activity, muscular endurance, sleep quality, empowerment, and enjoyment. Results showed significant improvements in physical activity and muscular endurance, with enjoyment notably linked to increased physical activity levels. However, psychological empowerment did not significantly impact the outcomes, and no improvement was observed in sleep quality.

Nyberg, S. T., Frank, P., *et al*. (2025) [12]. This study examined the relationship between leisure-time physical activity and years lived free from major non-communicable diseases across different population subgroups. It found that individuals meeting WHO-recommended physical activity levels gained up to 2 additional disease-free years compared to those with low activity levels. Notably, the benefits were more pronounced in individuals with higher health risks or disadvantaged backgrounds, such as smokers, those with lower education or income, and those with depressive symptoms. The findings suggest that promoting physical activity, especially in targeted groups, could help reduce health disparities and improve overall population health.

Feng, Y., Jia, Y., Jiang, J., & others. (2024) [13]. The study investigates how lifestyle habits like physical activity levels, body composition, and muscle strength influence mental health in young men. Results from 133 participants revealed that extended periods of sitting and higher body fat were linked to more severe symptoms of depression. Moreover, initial body composition was a predictor of mood changes over a three-month period. These findings highlight the importance of maintaining an active lifestyle and healthy body composition for better mental well-being.

Zhong, T. (2024) [15]. This study examines how different types of motivation for physical activity relate to aspects of psychological well-being among university students, using frameworks from self-determination theory and Ryff's model. Data from 966 Chinese students were analyzed through canonical correlation analysis, revealing two key relationships. The first showed that self-driven forms of motivation-such as intrinsic and identified regulation-were strongly linked to overall psychological well-being. The second suggested that lower levels of external motivation and a motivation were associated with greater personal growth. The findings highlight the value of fostering internal motivation to support students' mental and emotional health.

Ghosh *et al*. (2023) [16]. A study on 650 West Bengal urban academic professionals revealed a substantial correlation between obesity-related health concerns like type 2 diabetes, heart illnesses, hypothyroidism, arthritis and ectopic fat deposition, especially visceral fat. In addition to evaluating how visceral fat percentage (VF%) predicts cardiovascular disease risk across age groups, the research sought to uncover risk variables that contribute to obesity. Body Mass Index (BMI) and VF% both shown similar relationships with other metrics, suggesting VF% as an extra risk factor in situations when BMI alone would not be sufficient. Their association with obesity was corroborated by long-term trends of diseases like hypertension, hypothyroidism & type 2 diabetes. Vitamin D insufficiency, elevated inflammation, and liver problems have all been linked to unhealthy eating habits. Additionally, a family history of obesity and sedentary lifestyles were important factors.

Collins, A. M., *et al*, (2023) [41]. The aim of this research was to investigate the influence of inactive lifestyle and exercise on the fitness of the brain in late adulthood. Most of the conflicting and inconsistent research that has been done so far on SB's effects on brain health is derived from cross-sectional and observational studies that employ various methods of assessment. Numerous research works have failed to sufficiently consider PA's function in these associations the study highlights the need for more randomized clinical trials with precise methodology and prospective longitudinal studies to better understand the unique effects of SB on the brain that distinguish it from PA.

Martland, R., Teasdale, S., *et al*. (2023) [17]. Investigated the dietary consumption, exercise and inactive lifestyle patterns between individuals with established psychosis participating in the IMPACT experiment The subjects' high intake of discretionary items, low dietary quality and fruit and vegetable consumption were both present according to the findings while most people spent lengthy hours seated, a few achieved the required PA levels. The study found relationships between PA, global function, negative symptoms, and sedentary behavior. Following the intervention, PA improved less among patients with greater unfavourable symptoms. These findings highlight the necessity of complete lifestyle therapies that focus on sedentary behavior, eating patterns, and PA. It's also important to customize programs according on the mental health of the individual, since negative symptoms may affect how well they respond to these interventions.

Hamer, M., & Smith, L. (2023) [18]. The article emphasizes how depressed symptoms have a major influence on lifespan and well-being, especially when it comes to their correlation with mortality and cardiovascular disease. Frequent exercise has been shown to have antidepressant properties and assists in fighting against depression. But lately, focus has shifted to how sedentary activities-like playing video games or watching TV-affect mental health. Though it may be pleasurable and calming, there is growing evidence that inactive lifestyle may raise the risk of depression on its own, apart from physical exercise. The review explores possible biological causes and looks at epidemiological data that links sedentary activity to depressed symptoms.

Gonzalez Ramirez, G., Bolaños Muñoz, L. (2023) [19]. High carbohydrate diets, and sedentary lifestyles are the main causes of obesity, which is a global health issue. Millions of people, including millions of children, were fat and billions were overweight in 2016. Being fat is one of the chief reasons of death since it raises the threat of diabetes, heart problems, and cancer. Surgical procedures, chosen according to patient appropriateness and severity, offer good short- and medium-term outcomes for controlling illnesses such as type 2 diabetes and weight reduction, but traditional techniques like diet and exercise remain crucial. Depending on the patient's requirements, surgical treatments include gastric bypasses and sleeve gastrectomy.

Lavados-Romo *et al*. (2023) [20]. This study examined the association among screen usage, exercise, and general well-being in Chilean university students.726 first-year scholars contributed in the study and answered three questions. Based on screen exposure duration, the results indicated considerable differences in overall fitness satisfaction and quality of life. These results point to a detrimental association between screen usage and quality of life, especially when it comes to social interaction and mental health. Regardless of variables like gender, degree of physical activity, or socioeconomic background, this connection persisted.

Kumareswaran (2023) [21]. This research explores the dangers of sedentary lifestyles in the current world, with a focus on employees because of modern technology. It examines the risks to the health of the body, mind, and society associated with this trend of inactivity, which can lead to diseases including hypertension, obesity and diabetes due to a lack of exercise. The study highlights the significance of increasing physical activity better nutrition, and abstaining from dangerous habits in order to allay these worries. The study emphasizes the significance of behavioural modifications to lower rates of morbidity and death because it recognizes the connection link a sedentary lifestyle and poor health outcomes.

Levy, M., Nguyen, A., Kakinami, L., & Alberga, A. S. (2023) [22]. The objective of this research were to examined the connections among inactive lifestyle, time spent engaging in varying degrees of physical activity (PA), mental health, and weight bias internalization (WBI). 175 adults from Canada make up the sample size. In this investigation, several linear and logistic regression models were employed. The findings showed a substantial correlation between WBI and poor mental health factors, as well as a decrease in exercise and an increase in inactive lifestyle.

In 2022 research, Sedaghati, P., *et al*. inspected the influence of COVID-19 constraints on motor abilities in boys with intellectual deficits (ID). They were split up into groups that were active and inactive. After a year of constraints, children who were active had considerably improved gross and fine motor abilities, postural control, and dynamic balance than children who were sedentary. The study emphasizes how critical it is to support physical activity in children with ID in order to preserve and enhance motor abilities, offering doable activities and active involvement in programs. This can lessen the chance of developing chronic illnesses and obesity, which are linked to sedentary behaviour.

Pears, M., *et al*. (2022) [23]. This study investigated the outcome of mediators and confounders on the connection between sedentary time and exercise on adults psychological wellbeing. Sample size: 284 individuals who completed validated questionnaires, about their workouts seating habits and psychological well-being. Multiple regression analysis was employed in this investigation. The combined analysis resulted in a substantially lower melancholy score for those who were less sedentary (less than 8 hours).

A study conducted in 2022 by Cheval, B., *et al*. on approximately 79,000 persons 50 years of age or older discovered a correlation among enlarged stages of depressive symptoms and poor sleep quality and sedentary behaviour. In particular, those who slept less well than others and those who involved in exercise compared to those who did not both reported greater levels of depressed symptoms. Additionally, the study found the connection among poor sleep quality and a lack of exercise, demonstrating that the effect of poor sleep quality on depressed symptoms was greater in physically inactive people.

Appelqvist-Schmidlechner, K. and colleagues (2022) [42]. This study looks at the relationship between 409 young men from Finland's mental health and their lack of exercise and inactive lifestyle as determined by accelerometers. The findings, even after controlling for confounders, indicate a substantial association between overall exercise and signs of psychological wellbeing issues. But there was no discernible link discovered between exercise and psychological wellbeing. According to the research, young adult male's psychological wellbeing outcomes can be highly impacted by the type and environment of exercises.

Herbert, C. (2022) [24]. It investigates how therapies involving physical activity and exercise may help this population's mental health issues. The objective of the proposed university-based study is to examine out how low- to moderate-intensity exercise treatments affect students' perceptions of stress, symptoms of insanity, and general well-being. According to preliminary research, university students' psychological wellbeing and exercise are positively correlated. Over a period of weeks, low- to moderate-level aerobic physical activity has been demonstrated to have potential in lowering depression symptoms and perceived stress. Furthermore, certain workouts, such as yoga, appear to have an instantaneous effect on body signals and emotion processing. These findings emphasize the value of thorough research on the psychological and physiological elements that improve psychological health and wellness among emerging adult groups, including college students.

In 2022, Ringin, E. examined the connection between exercise, a inactive lifestyle, and psychological well-being during the coronavirus. There are 658 people in the sample

(169 men and 489 women). Data gathered via an online survey, with a regression model applied to the information. The results indicated that in order to maintain excellent psychological health, health promotion initiatives should concentrate on both decreasing passive sedentary behaviors and boosting physical exercise.

Sharma, D., *et al*. (2022) [25] sought to identify the prevalence of and contributing variables to adult physical inactivity. A community-based, cross-sectional research with 374 persons ages 20 to 50 was conducted. The Global Physical Activity Questionnaire was given by skilled field investigators. Software called Epi Info was used to examine data. The linked factors were found through the use of logistic regression. More than half of the individuals did not engage in physical exercise based on WHO guidelines. This emphasizes how crucial it is to strengthen current programs aimed at encouraging adult physical exercise.

Brodersen, K., *et al*. (2022) [43]. This study examines the association between high smartphone use and youth mental fitness in two Canadian urban regions. It is a component of the Smart Platform, an online program for citizen research and digital epidemiology. A specially designed smart-phone application was used to gather data on screen time behaviours, demographics, and different mental health consequences. Based on data from 437 participants, ages 13 to 21, the results show that 71.2% of them reported using their smart-phones a lot over a normal week. While heavy weekend gaming and smart-phone usage overall were connected to almost three times the risk of suicidal thoughts, heavy weekday and weekly smart-phone use was tied to almost double the risk of anxiety.

Reyes-Molina, D., (2022) [26]. This study examined the associations between 469 university students' subjective well-being and mental health during the COVID-19 pandemic and their level of exercise and inactivity. Using self-reported activity levels as a basis, four behavioural profiles were developed. The results showed that students who were sedentary and physically inactive had the lowest levels of overall mental health, pleasant affective experiences, and subjective well-being. The overall mental health of students who were not sedentary but were physically active was greater than that of students who were both sedentary and physically active. The research emphasizes the grave consequences that a physically unfit and inactive behaviour had on the psychological wellbeing of Chilean campus scholars during the epidemic.

Reyes-Molina, D., *et al*. (2022) [26]. The research aim was to examined the connection among university scholars' personal well-being and psychological state during coronavirus epidemic. in Chile and the pattern of exercise and idle time they exhibit. The findings demonstrated that when the epidemic was in progress university students in Chile who led sedentary, physically inactive lifestyles had worse levels of overall wellbeing and mental health.

Sallis and associates in 2021 examined exercise levels & coronavirus outcomes of 48,440 adult COVID-19 patients are compared in this research. Three categories was distinguished grounded on the patients' self-reported stages of exercise: consistently inactive (0-10 min/week), moderately active (11-149 min/week), and constantly meeting rules (150+ min/week). The findings demonstrated that people who were consistently sedentary had significantly higher odds of being known to the critical care unit, dying from coronavirus, and being hospitalized when compared to those who routinely met physical activity guidelines. Moreover, those who were continuously inactive were more likely to have poor outcomes than those who just sometimes exercised.

Berki, T., *et al*. (2021) [44]. This study, which included 705 high school students as subjects, found that teenagers amidst the COVID-19 outbreak in Hungary had an increased danger of depressive symptoms owing to a sedentary lifestyle. The research was examined using regression and descriptive statistics. The results indicate a greater risk of depression among girls. The study came to the conclusion that exercise is crucial for addressing this issue.

Suherman, A. (2021) [27]. Objective of the research was the C0VID 19 influences students' levels of exercise and inactive lifestyle while they are learning online. By employing online surveys that employed the International Physical Activity Questionnaire (IPAQ-SF), a condensed version, 377 scholars were involved in the sample size. The data analysis used descriptive statistics and the t-test. The results showed that there was no difference in the performance of male and female students. Scholars spend an average of nine hours a day sitting down. The research concludes that students exercise during the coronavirus were moderate to intense, that gender had an impact on variances in physical activity but not sedentary behavior, and that students spent a lot of time sitting down while

In their study, Rodriguez-Larrad, A., *et al*. (2021) [28] investigated how gender affected the amount of sitting and exercise among campus students in Spain during coronavirus. With the use of an online survey, information were gathered from sixteen Spanish institutions. The International Physical Activity Questionnaire applied in this research. The findings indicate that women were more adept at adjusting to physical activity than males were. They also spent more time engaging in physical activity and found it enjoyable. Women were also more likely to utilize social media to get physical exercise.

Kandola, A., *et al*.. The research aim was to comprehend the movement behaviours that have replaced sedentary behaviour in relation to symptoms of sadness and anxiety. This was a prospective cohort research including 60,235 people from the UK Biobank. The results indicate that substituting physical exertion ranging from moderate to intense and sleep for 60 minutes of sedentary behaviour will reduce 6.6% of the anxiety symptom score. Conversely, substituting light activity for 60 minutes of sedentary behaviour was linked to increased ratings for anxiety symptoms by 4.5%.

According to Woessner, M. N., *et al*. (2021) [29]. This study's objective was to make daily chores easier, which would result in a more sedentary lifestyle. While improvements in medicine have extended life expectancy, they have also caused the incidence of weight gain to increase and disorders associated with it. This review looks at how technology affects sedentary behavior. We suggest repurposing technology to encourage greater physical activity using the affective-reflective theory (ART), which may enhance general health and well-being.

In 2020, Yoo, J. I., *et al*. [30] examined the association among campus scholars levels of fitness, sitting time, and smartphone use. 237 persons make up the sample size. In this investigation, logistic regression was used. Both the smartphone usage time and the sitting time were split into three groups: 0-4, 4-7, and ≥7 hours, and ≥4-10, ≥10, and ≥4

groups. The findings showed that longer periods of sitting increased the likelihood of deteriorating fitness, and that this risk remained even after altering for age, gender, body percentage fat and exercise.

Park, Moon, Kim, H., *et al*. (2020) [7]. Reviewed the data supporting the health hazards associated with sedentary lifestyles and their summary. This article discusses the physiological characteristics, epidemiology, causes, and health hazards of a lack of physical activity. These risks include metabolic disorders including diabetes mellitus, hypertension, obesity, and cancer, as well as coronary artery disease, osteoporosis, musculoskeletal diseases, depression, and cognitive function-were all covered in this qualitative paper.

Hallgren, M., Nguyen, T., Owen, N., *et al*. (2020) [40]. Looked at the associations among anxious & d symptoms of depression and sedentary behavior. Sample size: 40,550 employees, 60% of whom are men and whose mean age is 42, were gathered between 2017 and 2019.The Swedish Health Profile Assessment Database was used in this investigation. The relationships between the duration of sedentary time and the rate of its breaks and symptoms of unease and sadness were evaluated using a logistic regression model. Findings indicate that pause extended stretches of time spent sitting during free time may lessen the likelihood of developing anxiety and depressive symptoms.

Qin, F., and colleagues (2020) [39]. The study's objective was to assess screen usage, physical activity, and mental health during China's 2019 coronavirus outbreak. Snowball sampling was employed in this investigation. Thirty-one Chinese provinces received a questionnaire via the internet. International Physical Activity Questionnaire (IPAQ) was applied under this study. ANOVA was applied in this research. The findings showed that over half of Chinese individuals temporarily embraced a inactive lifestyle with minimal amounts of exercise, increased screen time, and low emotive states throughout this lockdown, which may have negative health effects.

Maugeri, G. (2020) [38]. The objective of this research was to investigate how exercise stages varied during self-quarantine in Italy and how physical activity affected psychological wellbeing. 2524 participants make up the sample size. The International Physical Activity Questionnaire (IPAQ) and the Psychological General Well-Being Index were the study's instruments. The findings indicate that there is a noteworthy beneficial link between variations in physical activity and psychological wellbeing.

Romero-Blanco, C., *et al*. (2020) [37]. Research objective was to assess students' sedentary and exercise patterns both before to and throughout the coronavirus lockdown. Cross-sectional and observational designs are employed here. A Short Form International Measure of Physical Activity was used. The findings indicated a rise in both sedentary behavior and physical exercise.

Zheng, C., Sheridan, S., Huang, W., and others (2020) [36]. The investigation's goal is to examine young persons' sleep patterns, levels of exercise, and changes in inactive lifestyle before and after COVID-19 pandemic. The study was both longitudinal and cross-sectional. The findings indicate that a considerable decrease in physical activity will result in a rise in sedentary behaviour.

Gallo, L., Gallo, T., Young, S., *et al*. (2020) [33]. Investigate how COVID-19 affects Australian university students' energy intake and levels of physical activity. An computerized, self-administered nutritional assessment tool was one of the tools employed. In 2018, 2019, 2020, and 2019, data from University of Queensland third-year biomedical classes were gathered. The results specify that there was no difference in energy consumption between weekday and weekend recollections for both males and females. Male and female differences in the second part, which focused on ethnicity, were not statistically significant. The duration of time engaging in intense activity did not change in the third segment, which examined physical activity levels based on the Active Australia Survey.

Carballo-Fazanes, A., *et al*. (2020) [45]. The research objective were to determine the factors that affect college students' sedentary behavior and physical activity levels. There were 608 pupils in the study's sample. Using stratified random sampling, data was gathered from Santiago de Compostela University in Spain. The Kolmogorov-Smirnov test and chi square were used. The demographics, reasons for engaging in and stopping exercise, and reasons for inactive lifestyle were all included in the result. These included screen time and studying, health issues, perceptions of one's physical and general health, drug use, interpersonal relationships, physical education in the classroom, and extracurricular physical activity. A strong correlation was found between the lack of physical exercise and the time spent studying, staring at screens, feeling depressed, and consuming. Study concluded that most of the university students did some exercise which was associated with less inactive lifestyle.

Diamond, R., *et al*. (2020) [46]. The objective of the study was to examine whether leading a less sedentary lifestyle during COVID-19 may improve mental health. Throughout the entirere search, a number of evidence-based recommendations are made to address the pandemic, such as using external cues, moving more frequently, moving during regular waiting periods, reallocating time, using different workstations, rearranging the physical space, and spending time with family members. The study's final findings indicated that, given the numerous obstacles people's mental health is experiencing, it is critical that they alter their way of living and uphold or increase their degree of exercise in order to relieve their symptoms.

Moreno-Llamas, A., *et al*. (2020) [35]. Examined how Europe's seating habits have changed as a result of advancements in digital technology. There were 28,031 participants ≥ 15 in the cross-sectional survey. In this investigation, simple linear regression was used. The results demonstrated that, although owning an electronic device (a CD, DVD player, laptop, computer) was associated with more duration of sitting (>4.5 h/day) in the general populace, with only slight differences by sex, duration of sitting was positively correlated with digital nation-building.

Akulwar-Tajane, I., Parmar, K. K., Naik, P. H., & Shah, A. V. (2020) [34]. This study looked into how physiotherapy students used screens, slept, and felt about their mental health during the coronavirus. A self-reported questionnaire was used to survey a sample size of 150 physiotherapy students. According to the study's findings, students studying physiotherapy used screen-based digital media and gadgets far more during the coronavirus shut down. Numerous university students use their smart-phones excessively and multitask while watching media. This leads to chronic sleep deprivation and negatively impacts

cognitive function, academic achievement, and socio-emotional functioning. This study further seeks to ascertain the mediating role that exercise plays in mitigating the negative impacts of screen time.

In a study published in 2020, Grasdalsmoen, M., *et al.* [32] examined the connection among exercise & psychological wellbeing in Norwegian college and university students. Analysis was done on 50,054 participant data increased levels of intensity, duration, and frequency of exercising were linked to better psychological wellbeing outcomes. The frequency of exercise showed the strongest effects. Low exercise levels were connected with a significantly more danger of psychological health issues in both gender.

Rogowska, A. M., and colleagues (2020) [31]. During the COVID-19 epidemic, This study examines the connection between university students in Ukraine's psychological wellbeing and exercise. The sample consisted of 1512 students, 69% of whom were female, with an average age of 20 years, representing 11 universities. During the epidemic, from May 14 to June 4, 2020, data was gathered. The findings indicated that 43% of students participated in at least 150 minutes of exercise each week, with 24% satisfying the criteria for anxiety and 32% for depression. Prior to the epidemic, more pupils engaged in physical activity.

Methods

Objective: To examine potential gender differences in the associations with sedentary behavior among Indian students.

Hypothesis

Sedentary lifestyle would be higher in females in comparison to males.

Walking would be higher in females in comparison to males

Tools: Sedentary lifestyle: The International Physical Activity Questionnaire by Craig CL *et al*. (2003) will be used to assess a sedentary lifestyle.

Sampling technique

Purposive sampling will be applied in this study

Research Design

The current study is a quantitative empirical study. This study will employ a cross-sectional design to collect data on sedentary behavior from a sample of university students.

Sample size

Haryana College & University students from various disciplines and academic year 2023 will be recruited. "Selecting a sample size of 250 students (125 males & 125 females) aged 18 to 25 for the study."

Data Analysis

Descriptive statistics will be used to examine the prevalence sedentary lifestyle. Data collected from all the subjects were thoroughly checked and scrutinized so that any gap or confusion identified at the preliminary stage could be clarified henceforth. Finally, the data from the questionnaire were entered with accuracy and precision to the computer for computational purposes. For statistical analysis of the data, the SPSS 20 was used. In case of quantitative data descriptive statistics like measures of Central Tendency and ANOVA analysis were applied for verification of the research hypotheses and to explore the associations between variables of interest.

Results

Table 1: Descriptive Statistics of Sedentary Lifestyle (FEMALES)

	N	Minimum	Maximum	Mean	Std. Deviation
Vigorous	250	.00	10080.00	1332.5600	1771.71458
Moderate	250	.00	4320.00	684.1600	938.46768
Walking	250	.00	4158.00	1443.6040	1219.02054
Valid N (listwise)	250				

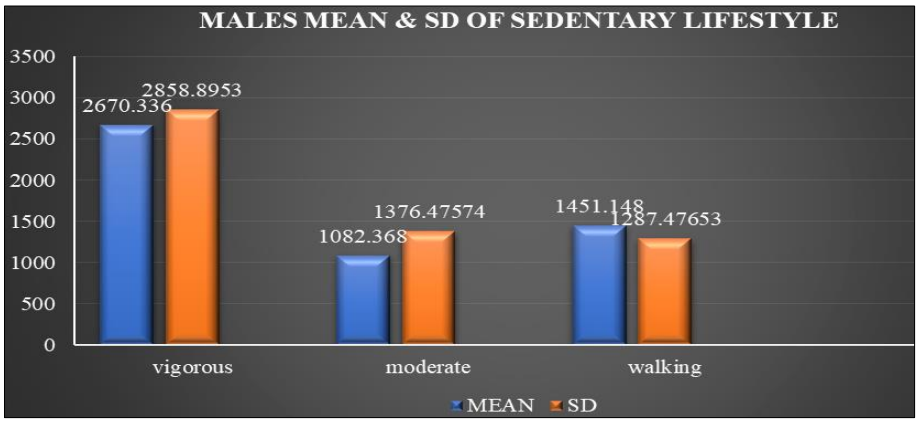

Fig 1: Graphical representation of Sedentary Lifestyle (FEMALES)

Table 2: Descriptive Statistics Sedentary Lifestyle (MALES)

	N	Minimum	Maximum	Mean	Std. Deviation
vigorous	250	.00	10080.00	2670.3360	2858.89530
moderate	250	.00	7200.00	1082.3680	1376.47574
walking	250	.00	4158.00	1451.1480	1287.47653
Valid N (listwise)	250				

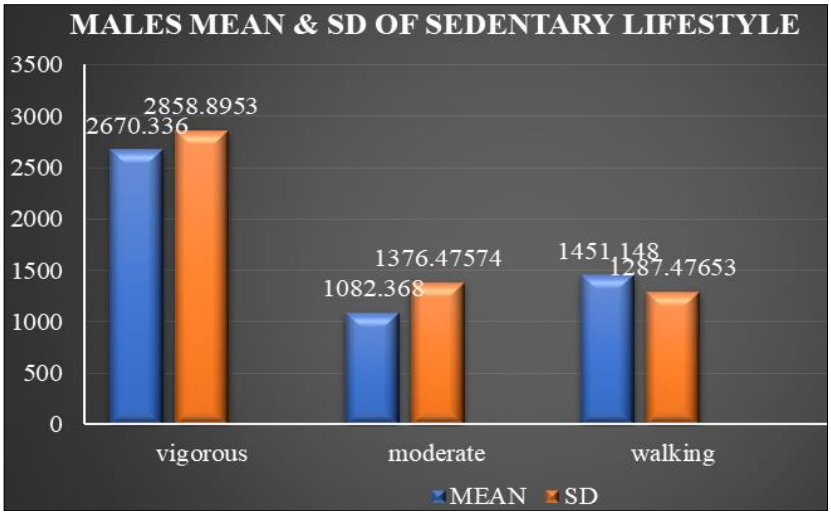

Fig 2: Graphical representation of Sedentary Lifestyle (MALES)

Table 3: Regression Model Summary and F-Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.189[a]	.036	.016	5.65409	.036	1.798	5	244	.114

Table 4: Analysis of Variance (ANOVA) for Regression Model Fit

Model	Sum of Squares	df	Mean Square
Regression	287.405	5	57.481
Residual	7800.359	244	31.969
Total	8087.764	249	

Conclusion

The present study aimed to explore gender-based differences in physical health outcomes associated with a sedentary lifestyle among university students aged 18 to 25. The findings revealed that although both male and female students engage in sedentary behaviours, significant variations exist in the type and intensity of physical activity between genders. Descriptive statistics showed that males reported higher levels of vigorous and moderate physical activity compared to females, whereas walking levels were relatively similar across both groups.

Despite females reporting lower overall activity levels, the ANOVA results indicated no statistically significant difference between genders in terms of sedentary behavior and its impact on physical health outcomes (p>.05). This suggests that while behavioral patterns may vary, the sedentary lifestyle poses health risks across genders in comparable ways.

The data underscores the critical need for structured physical activity interventions that are not only inclusive but also sensitive to gender-specific lifestyle habits and health concerns. Educational institutions and policymakers should prioritize awareness campaigns and wellness programs tailored to reduce sedentary time and promote active living, especially among young adults transitioning into more sedentary academic and professional roles.

In conclusion, while gender-specific patterns in physical activity exist, the overall adverse impact of sedentary lifestyles remains a shared concern. A comprehensive, inclusive approach to promoting physical well-being can help mitigate long-term health risks for both males and females.

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