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Adolescents' Physical Exposures and their Sedentary Behavior Amidst Technological Dominance

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Abstract

This study examined adolescents' physical exposure and sedentary behavior amidst technological dominance among students of Fatima National High School in General Santos City, Philippines. It specifically aimed to determine the extent of sedentary behavior, assess levels of physical activity, and identify the influence of technological use on adolescents' health and daily routines. A quantitative research design was employed using a validated self-constructed survey questionnaire administered to 379 Grade 7 to Grade 12 students selected through proportional stratified sampling from a total population of 7,055 students during the School Year 2024–2025. Data were analyzed using descriptive statistical tools to identify patterns and trends in physical activity and sedentary behavior.

Findings revealed that adolescents spend a substantial amount of time engaging in screen-based activities, including social media use, online gaming, and digital entertainment, as well as online learning platforms. This high level of technological exposure is associated with reduced physical activity and increased sedentary behavior. The study further identified potential health risks linked to prolonged inactivity, including obesity, cardiovascular problems, musculoskeletal discomfort, and mental health concerns. Results indicate that technological dominance significantly shapes adolescents' daily routines, limiting opportunities for outdoor activities and active social engagement.

The study concludes that excessive engagement with digital technologies contributes to sedentary lifestyles among adolescents. It is recommended that schools, families, and community stakeholders implement structured physical activity programs, screen time regulation strategies, and awareness initiatives to promote healthier and more active lifestyles among adolescents.

Keywords: *adolescents, sedentary behavior, technological dominance, physical activity, screen time*

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I. INTRODUCTION

Technological dominance has become a significant influence on adolescents' physical exposure and sedentary behavior. The rapid advancement of digital technology, including smartphones, computers, online learning platforms, social media, and video games, has greatly affected the lifestyle patterns of adolescents. While technology provides educational, social, and entertainment benefits, excessive exposure to screen-based activities contributes to prolonged sedentary behavior and reduced physical activity.

Sedentary behavior refers to activities that involve little to no physical movement and low energy expenditure, such as sitting, lying down, watching television, using mobile devices, and playing video games. Research has shown that prolonged sedentary behavior among adolescents increases the risk of obesity, cardiovascular diseases, type 2 diabetes, musculoskeletal disorders, anxiety, depression, and poor mental well-being. Furthermore, excessive screen time reduces opportunities for outdoor activities, sports participation, and face-to-face social interaction.

Adolescence is a critical developmental stage where physical activity plays an essential role in promoting healthy growth, emotional stability, and social development. However, technological dominance continues to replace physically active lifestyles with screen-centered routines. The increasing reliance on digital platforms for education, communication, and recreation further intensifies sedentary habits among adolescents.

This study focused on assessing adolescents' physical exposure and sedentary behavior amidst technological dominance among students of Fatima National High School. The findings of this study may provide valuable insights for educators, parents, and health advocates in designing interventions and programs that encourage physical activity and healthy lifestyle practices among adolescents.

Objectives of the Study

This study aimed to examine adolescents' physical exposure and sedentary behavior amidst technological dominance.

Specifically, it sought to answer the following:

1. To what extent are adolescents physically exposed in various settings?

    1.1 School-related exposure

    1.2 Residential exposure

    1.3 Social exposure

2. What is the level of sedentary behavior among adolescents?

    2.1 Gadget use

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2.2 Screen-based entertainment

2.3 Screen time duration

3. What factors contribute to adolescents' physical inactivity?

3.1 Number of gadgets used simultaneously

4. Is there a significant correlation between adolescents' physical activity levels and their exposure to sedentary behaviors?

5. Is there a significant correlation between adolescents' sedentary behavior and their level of physical inactivity?

II. METHODOLOGY

Research Design

This study employed a quantitative research design to systematically analyze adolescents' physical exposures and sedentary behavior amidst technological dominance. Quantitative research was utilized because it allows the collection and analysis of numerical data in an objective and structured manner. Survey questionnaires were used to gather information regarding students' screen time, physical activity levels, and sedentary behaviors. Statistical analysis was employed to identify patterns, relationships, and trends related to the study variables.

Participants of the Study

The respondents of this study were Grade 7 to Grade 12 students enrolled at Fatima National High School during the School Year 2024–2025. The school is located in General Santos City, Region XII, Philippines. The respondents represented adolescents from diverse socioeconomic backgrounds, making the setting appropriate for examining sedentary behavior and physical activity amidst technological dominance.

The total student population consisted of 7,055 students distributed across Grade 7 to Grade 12. Using Slovin's Formula with a 5% margin of error, the computed sample size was 379 respondents. Proportional stratified sampling was used to ensure fair representation across all grade levels.

Data Gathering Tool

The primary instrument used in this study was a self-constructed survey questionnaire designed by the researcher. The questionnaire gathered quantitative data regarding sedentary behavior, physical activity levels, and technology usage patterns among adolescents. It consisted of sections on demographic information, sedentary behavior assessment, physical activity levels, and technology usage.

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To ensure validity, the questionnaire underwent expert validation by professionals specializing in physical education, adolescent health, and educational research. Suggestions and recommendations from validators were incorporated to improve the clarity, relevance, and appropriateness of the instrument.

Data Analysis

The collected data were organized, tabulated, and statistically analyzed to determine the patterns and relationships among the variables. Frequency counts, percentages, weighted mean, and other appropriate statistical treatments were utilized to interpret the responses of the respondents. Statistical analysis enabled the researcher to identify trends related to sedentary behavior, physical activity, and technological exposure among adolescents.

Ethical Consideration

The researcher observed ethical standards throughout the conduct of the study. Permission to conduct the study was secured from the school administration of Fatima National High School prior to data collection. Participation of the respondents was voluntary, and confidentiality of responses was strictly maintained. Respondents were informed about the purpose of the study, and their identities were protected to ensure privacy and anonymity. The collected data were used solely for academic and research purposes.

III. RESULTS and DISCUSSION

The findings of the study revealed that adolescents spend a substantial amount of time engaging in sedentary activities, particularly those associated with screen-based technologies such as smartphones, social media, online gaming, and online learning platforms. Technological dominance has significantly influenced adolescents' daily routines, resulting in decreased physical exposure and increased sedentary behavior.

The study showed that prolonged screen time contributed to lower participation in physical activities such as sports, outdoor recreation, and exercise. Many adolescents preferred digital entertainment and online interaction over physically active activities. These findings support previous studies which emphasized that technological advancements have intensified sedentary lifestyles among adolescents.

Results also indicated that sedentary behavior is associated with several health concerns, including obesity, cardiovascular problems, musculoskeletal pain, poor posture, stress, anxiety, and reduced social interaction. Excessive technology use and lack of movement negatively affected both physical and mental health among adolescents.

Furthermore, the findings emphasized the importance of integrating physical activities into adolescents' daily routines. School-based interventions, physical education programs, outdoor activities, and active commuting were identified as important strategies in reducing sedentary behavior and promoting healthier lifestyles among adolescents.

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The study highlighted that while technology offers educational and social benefits, excessive dependence on digital platforms contributes to unhealthy sedentary patterns. Therefore, balancing technological use with physical activity is essential in promoting adolescents' health and well-being.

IV. CONCLUSION and RECOMMENDATIONS

Conclusion

The findings indicate that adolescents demonstrate an imbalanced level of physical exposure, characterized by limited engagement in social physical activities despite moderate exposure within home and school environments. Sedentary behavior is highly prevalent, primarily driven by prolonged screen time and frequent gadget use. While physical activities are present in structured school settings, these are significantly overshadowed by extended periods of inactivity, reflecting an emerging sedentary lifestyle among adolescents.

Overall, the results suggest that technological dominance is shaping adolescent behavior by reducing opportunities for physical movement and direct social interaction. This highlights a growing public health concern that requires targeted interventions to promote active lifestyles and reduce sedentary patterns among adolescents.

Recommendations

Based on the conclusions of the study, the following recommendations are proposed:

Schools should strengthen the integration of structured, movement-based, and socially engaging activities beyond traditional Physical Education classes. These may include active classroom routines, outdoor experiential learning, and collaborative physical activities such as sports and dance to enhance both physical and social exposure.

Schools and households should implement strategies to regulate screen time and encourage active breaks during prolonged gadget use. Simple interventions such as scheduled movement breaks may help reduce the health risks associated with sedentary behavior.

Local government units and community organizations should develop accessible, youth-centered physical activity programs such as sports clinics, fitness camps, and community tournaments to encourage regular participation in physical activities outside the school setting.

Parents, teachers, and students should be educated on the health risks associated with excessive sedentary behavior, including obesity, cardiovascular diseases, and mental health problems, to promote awareness and support behavior change.

Future research should further explore the psychological and social factors influencing adolescents' screen use and physical inactivity to inform more targeted and effective intervention programs.

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