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SCHOOL LEADERSHIP IN ADDRESSING THE INFLUENCE OF PARENTAL INCOME ON PHYSICAL ACTIVITY AND SEDENTARY LIFESTYLE AMONG JUNIOR HIGH SCHOOL STUDENTS

Oce Wirawan¹, Siswantoyo², Donny Ardy Kusuma¹, Awang Firmansyah¹,
*Azmawaty Mohamad Nor³, Afif Rusdiawan¹, and Nursyuhaidah Mohd Kadri³

[1]

Fakultas Ilmu Olahraga, Universitas
Negeri Surabaya, 60213 Lidah Wetan,
Indonesia

[2]

Fakultas Ilmu Keolahragaan dan
Kesehatan, Universitas Negeri
Yogyakarta, 55281 Yogyakarta, Indonesia

[3]

Department of Educational Psychology
and Counselling, Faculty of Education,
Universiti Malaya, 50603 Kuala Lumpur

Corresponding Author:

*Department of
Educational Psychology
and Counselling, Faculty
of Education,
Universiti Malaya, 50603
Kuala Lumpur, Malaysia
E-mail:
azy_mn@um.edu.my*

ABSTRACT

The global prevalence of obesity among students is on the rise, primarily associated with sedentary activities and insufficient physical exercise. This study investigated the difference in the level of physical activity and sedentary lifestyle of students across different income levels of parents as well as active lifestyles strategies promoted by school leadership. A total of 900 students from 10 schools and 10 cities in East Java Indonesia participated in the study. The income data of students' parents was divided into 5 categories based on their income level (very low: n = 360; low: n = 231; medium: n = 123; high: n = 79; very high: n = 107). The research instrument used were Children Physical Activity Questionnaire (CPAQ) and Adolescent Sedentary Activity Questionnaire (ASAQ) to determine level of physical activity (PA) and sedentary lifestyle (SL) respectively. Mann Whitney test indicated that there was a significant difference between the PA and SL level between parents' income in the very low category and the low, medium, high, and very high categories ($p < 0.05$). It appears to be a significant difference in students' physical activity levels across parental income levels, with higher-income parents being able to provide more opportunities for physical activity. However, this relationship is reversed for sedentary behavior with higher-income parents having children engaging in more sedentary activities. Therefore, school leadership is instrumental in both promoting strategies to parents and students for fostering healthy and active lifestyles and ensuring equitable access to physical activities, especially for students from low-income backgrounds.

Keywords: School Leadership, School Leadership Strategies, Parental Income; Physical Activity, Sedentary Lifestyle



INTRODUCTION

The modern lifestyle has witnessed a decline in physical activity and a rise in sedentary behaviors, with the Covid-19 pandemic exacerbating this trend further. Physical activity, sedentary behaviors, and sleep have become three major behaviors that occupy a large portion of an individual's 24-hour daily routine during the pandemic (Zheng et al., 2020). Studies from various populations in different countries around the world have shown a reduction in physical activity and an increase in sedentary behavior after the pandemic (Zheng et al., 2020; Meyer et al., 2021). These two factors are linked to the worldwide issue of overweight and obesity which have grown across all age groups.

Physical activity is an intrinsic factor that supports health conditions. It encompasses a variety of activities such as leisure, walking or cycling, occupational tasks, household chores, playing games or sports, and exercise. As suggested by several doctors or health authorities around the world that adequate and regular physical activity is very important in supporting health in all aspects. There are many benefits if one participates physically active (Hallal et al., 2012; Warburton and Bredin 2017). By doing enough physical activity, it will be able to reduce the mortality rate by 31% compared to people with less physical activity (Arem et al., 2015; Huang, Ng & Ha, 2022). Regular and routine participation in physical activity also plays an important role in maintaining health and well-being throughout one's life (Wilk et al., 2017). Previous research has established that inactivity as one of the main factors that lead to obesity and overweight problem.

World Health Organization (2010) recommends children and adolescents aged between 5 and 17 years old to engage in at least 60 minutes of moderate-to-vigorous intensity, mostly aerobic physical activity per week and limit the amount of time spent being sedentary especially screen time. However, adolescents in Indonesia are currently not meeting this physical activity guideline. A scoping review of studies in Indonesia found the prevalence of 'sufficient' physical activity ranges only between 12.2% and 52.3% (Andriyani et al., 2020). In other words, more than half of Indonesian youth are physically inactive. In addition, another study conducted by Pengpid & Peltzere (2022) found 87.8% out of 11,124 middle-school students in Indonesia had low physical activity.

Apart from physical inactivity, sedentary behavior is also a significant concern, as a considerable number of individuals engage in it for extended periods. Sedentary behavior is often associated with a lack of physical activity as it refers to any activity that involves very little movement with an energy expenditure of less than 1.5 metabolic equivalent task (MET) while in a sitting, reclining, or lying posture (Tremblay et al., 2017). Among Indonesian youth, the prevalence of sedentary behavior more than 3 hours per day ranges between 24.5% and 33.8% (Andriyani et al., 2020). Prolonged unhealthy level of sedentary will increase the all-cause mortality rate, risk of non-communicable diseases and mental disorders. Extensive research has shown the strong association between sedentary lifestyles and health risk including metabolic diseases, cancer risk, osteoporosis, musculoskeletal diseases, and depression (Park et al., 2020).

Although both physical activity and regulation of sedentary behavior have established the protective effects on health, some studies also found that adequate physical activity seems to counteract the negative effects of prolonged sedentary behavior on mortality. For example, Stamatakis et al., (2019) found that mortality was not elevated in the individuals who participate in high level of moderate-intensity physical activity a day even when they had spending more than 8 hours of sedentary time a day. Despite the importance of physical activity and regulation of sedentary behavior, there have been few studies conducted on these topics in this high global population's country (Andriyani et al., 2020).

Sequentially, research examining physical activity and sedentary behaviors in children and adolescents underscores the significance of the ecological perspective. This perspective emphasizes the vital role of the environment in promoting physical activity and reducing sedentary behaviors within this specific population. Notably, the family



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and school environment are the most influential microsystem in the lives of children and adolescents. Factors found to be influencing the levels of physical activity and sedentary lifestyle have been explored in several studies. It has previously been observed that there is a significant association between socioeconomic status (SES) and physical activity and sedentary lifestyle. Specifically, individuals with lower SES are more likely to engage in sedentary behavior and have lower levels of physical activity compared to those with higher SES (Knell et al., 2020; Aggio et al., 2021). The research to date has tended to focus on the populations from low and middle income countries (Werneck et al., 2019; Uddin et al., 2019).

LITERATURE REVIEW

Social status is one of the important factors in health and well-being. It is well established that children from higher family income experience better outcomes compared to their counterparts. A number of studies have revealed a correlation between family's social status and children's physical activity (eg., Romero et al., 2001; Tandon et al., 2012). Living in poverty has been shown to affect the lifestyle behavior and health outcomes in children (Cottrell et al., 2015). Children living in poverty tend to be less active (Milteer et al., 2012; Singh, Siahpush & Kogan 2010). Those children with low family incomes have limited access to resources and play areas, resulting in lower physical activity levels compared to children from higher income families (Romero et al., 2001; Tandon et al., 2012). Other research has also shown that children from lower income families tend to have lower physical fitness levels and a higher risk of obesity than children with higher family incomes (Jin & Jones-Smith, 2019).

In addition to studies focusing on children, research examining the association between family income and physical activity among adolescents has also documented the greater physical activity in adolescents from higher income family. A large-scale study in 48 low-and middle-income countries revealed that physical activity of adolescents do not comply with the WHO recommendation and the prevalence of low physical activity was 15.3% (Vancampfort et al., 2019). They also found that adolescents are less likely to engage in physical activity due to factors such as food insecurity, low fruit and vegetable intake, poor parental support, and bullying. Furthermore, another large-scale study among 10,510 adolescents from 6 European cities found that adolescents living in disadvantaged socioeconomic positions discourage adolescents from engaging in physical activity (Falese, 2024).

Recent studies have also associated physical inactivity with sedentary behavior. For example, in a multinational study among 140,808 adolescents from low-and middle-income countries, prevalence of moderate-to-vigorous physical activity is higher in those engaging in more than 3 hours per day of leisure-time sedentary behaviors (Vancampfort et al., 2021). Like physical activity, several studies have attempted to establish the association between family socioeconomic status and sedentary behavior (eg., Silva et. Al, 2020; Mielke et. al., 2017). These studies have consistently found a positive correlation between family income and adolescents' sedentary behavior.

While some research has been carried out to explore the association between family income and physical activity or sedentary lifestyle, this topic has not yet been extensively studied in Indonesia. Recognizing the importance of increasing adolescents' physical activity and reducing sedentary behavior to promote public health, this study set out to compare physical activity levels and sedentary behaviors across various levels of parental income. Additionally, this paper recommends several strategies for school leadership aimed at advancing physical activity and reducing sedentary lifestyle among students. This study plays a crucial role in informing and empowering stakeholders at various levels including students, parents, teachers, school leaders and policymakers to promote healthier lifestyles and create supportive environments for physical activity participation.

METHODOLOGY

This study used a cross-sectional design with a total of 900 junior high school students, with details of 391 male students and 509 female students. The research subjects were taken from 10 junior high schools from 10 cities in the province of East Java, Indonesia. The research data was taken in August 2021 through filling out an online



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questionnaire. Filling out a questionnaire to determine the level of physical activity of students is done by filling out the Children Physical Activity Questionnaire (CPAQ) which is expressed in units of metabolic equivalent of task (METs) (Ahmad et al., 2016). The Children Physical Activity Questionnaire (CPAQ) is suitable for use in this study because the CPAQ is suitable for children aged 8-14 years (Kowalski, Crocker & Donen 2004; Paxton, Estabrooks & Dziewaltowski 2004). The CPAQ measurement was carried out by assessing the mode, duration, and frequency of physical activity and sedentary habits during the last 7 days (Corder et al., 2009). Meanwhile, to measure the level of Sedentary Lifestyle (SL level) using the Adolescent Sedentary Activity Questionnaire (ASAQ) instrument (Hardy, Booth & Okely 2007). ASAQ is done by calculating the average sedentary time per day. Sedentary lifestyle in high category if 5 hours per day, and low category if < 5 hours per day (Guo et al., 2012). The income data of parents of students is divided into 5 categories, namely very low category for income less than IDR 1500 low category for income between IDR 1500 to IDR 2500, medium category for income between IDR 2500 to IDR 3500 high category for income between IDR 3500 to IDR 4500 and very high category for income more than IDR 4500.

The data collected were analyzed descriptively to determine the characteristics of the research subjects consisting of the average and standard deviation of each variable. The Kruskal Wallis test was used to test whether there were differences in the level of physical activity (PA) and sedentary lifestyle (SL) based on the income levels of parents. The Mann Whitney test was also carried out as a post hoc test after the significant results of the Kruskal Wallis test were found.

RESULTS

This study used a total of 900 students from 10 cities and 10 junior high schools spread across the province of East Java. The following is descriptive data related to the characteristics of the subjects of this study.

Table 1. Characteristics of research subjects

Variable	Mean±SD		
	Boys	Girls	Total
Sample size (N)	391	509	900
Age (Year)	13.25±0.98	13.28±0.95	13.27±0.97
Height (cm)	154.23±12.12	152.77±7.86	153.41±9.96
Weight (kg)	45.78±12.16	44.36±8.49	44.98±10.27
BMI (kg/m ²)	19.14±4.00	19.01±3.36	19.06±3.65
CPAQ Scores	2.51±0.60	2.33±0.52	2.41±0.56
ASAQ Scores			
Time, weekdays	96.66±103.05	125.82±298.74	113.15±235.04
ASAQ Scores			
Time, weekend	231.05±254.13	267.87±227.64	251.87±240.07

Characteristics of research subjects based on Table 1 shows that the research subjects consisted of 391 male students and 509 female students. The overall average age is 13.27 years which is the age of adolescents (Backes and Bonnie 2019; Diananda 2019; MacKay and Duran 2008). BMI shows normal with an average of 19.06 kg/m² (Harahap, Widodo, and Mulyati 2014). Then to see the distribution of the types of work of parents, it can be seen in Figures 1 and 2 below.



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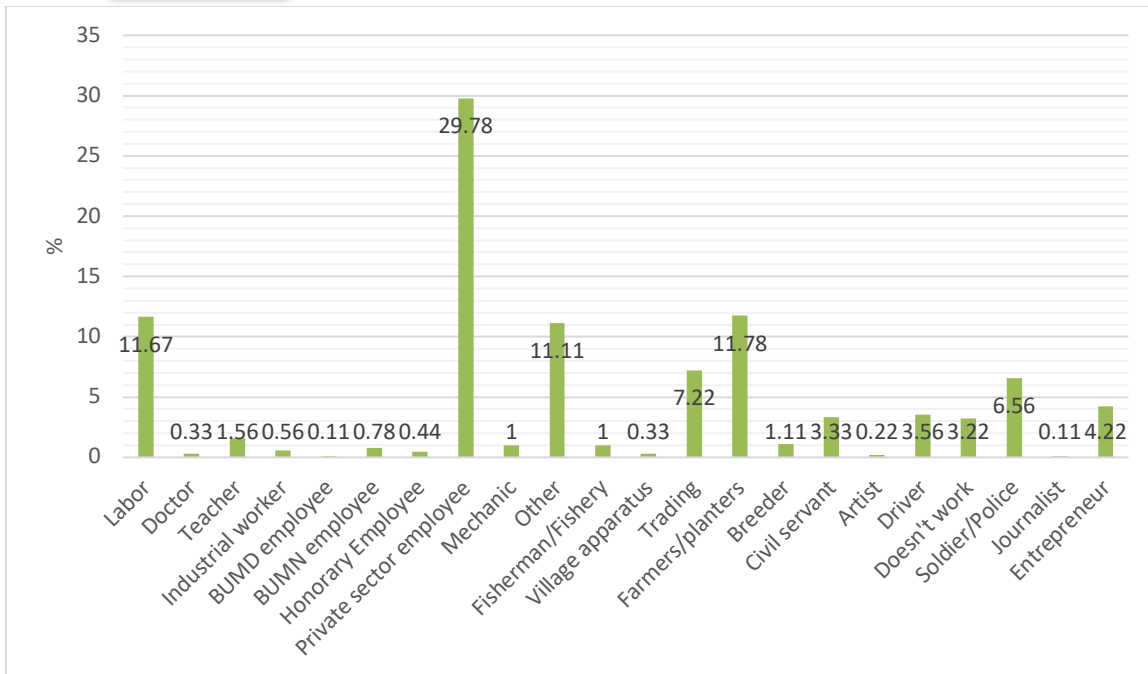


Fig 1. Percentage of father's occupation

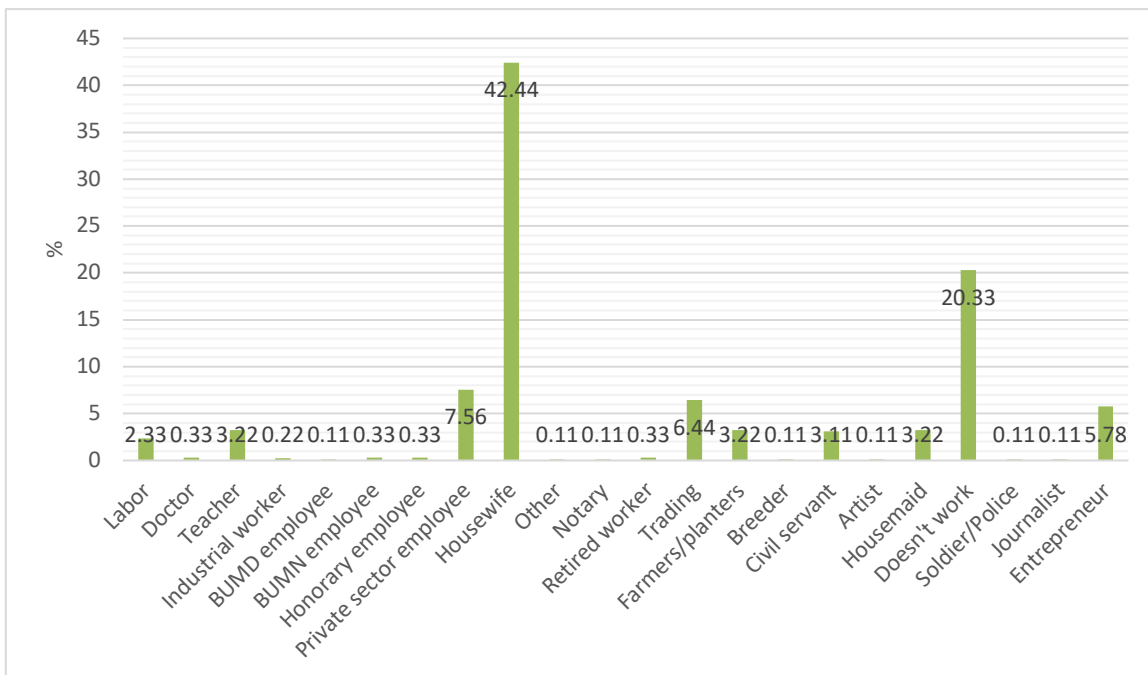


Fig. 2 Percentage of mother's occupation

Figures 1 and 2 above show that most fathers work as private employees while mothers mostly work as housewives and do not work. BUMN or State-owned enterprise agency is a term for state enterprises in Indonesia. BUMN is a company whose capital is entirely or largely owned by the state through direct participation and comes from the wealth of the separated state (Ansari, 2017). The regional government of Indonesia owns the Regional Property Enterprise Agency (BUMD) as an enterprise entity. The main difference between BUMN and BUMD lies in the level



of government that owns the majority of shares (Fahmi, 2019).

Furthermore, because the data were not normally distributed ($p < 0.005$), an analysis was carried out using the Kruskal Wallis test. The results of the Kruskal Wallis test can be seen in Table 2.

Table 2. Kruskal-Wallis test results for each variable studied according to the income level of parents

Variable	f	PA Level (Mean±SD)	P (sig)	SL Weekday (Mean±SD)	P (sig)	SL Weekend (Mean±SD)	P (sig)
<IDR 1500 (very low)	360	2.31±0.52		86.67±81.29		207.15±191.89	
IDR1500-2500 (low)	231	2.48±0.56		115.08±134.83		246.52±177.57	
IDR 2500- 3500 (medium)	123	2.43±0.58	0.000*	155.06±573.91	0.000	297.48±394.06	0.000*
Rp 3500-4500 (high)	79	2.52±0.61		124.57±98.68		294.62±209.87	
>IDR 4500 (very high)	107	2.51±0.60		141.44±123.02		329.90±206.31	

*Significant difference of ($p < 0.05$) using the Kruskal Wallis test

Based on data from the Indonesian Central Statistics Agency, East Java Province in 2018 had a provincial minimum wage of IDR 1508,895, while in 2019 it was IDR 1630,059 and in 2020 it was IDR 1768,777 (BPS 2020). Table 2 shows that 360 parents of students have very low incomes or under IDR 1500. This shows that most of the people of East Java Province are currently living unfit because they have lower incomes than the provincial minimum wage. The results of the Kruskal Wallis test showed that there were significant differences in all variables based on the income level of parents ($p < 0.05$).

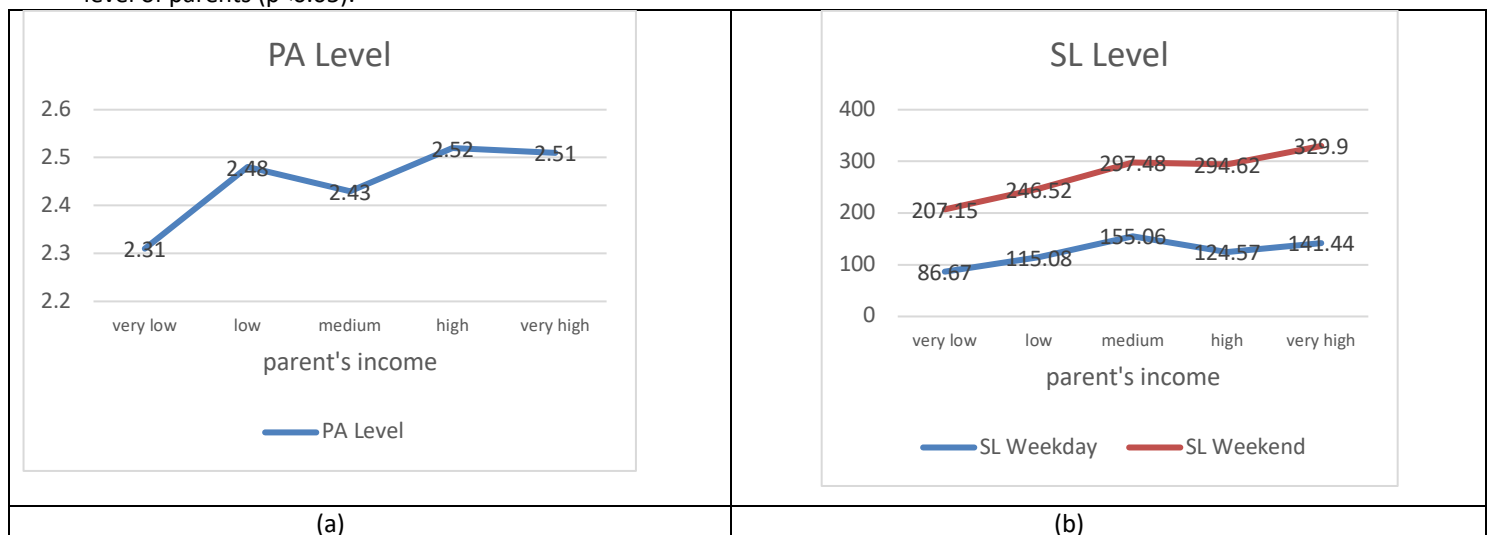


Fig. 3 (a) PA level value based on parent's income; (b) SL level based on parent's income

Figure 3 above shows information that the higher parental income tends to cause the level of physical activity and sedentary lifestyle to increase as well. For more details in knowing the influence of parents' income level on PA level and SL level, a post hoc test was conducted using the Mann Whitney test. The results of the Mann Whitney test are presented in table 3 below.



Table 3. The influence of parents' income level on PA level and SL level

Variable	Income Level		P (sig)
PA Level	<IDR 1500 (very Low)	IDR 1500 – IDR 2500	0.000*
		IDR 2500 – IDR 3500	0.034*
		IDR 3500 – IDR 4500	0.005*
		>IDR 4500	0.000*
IDR 1500 – IDR 2500 (low)	IDR 2500 – IDR 3500	IDR 2500 – IDR 3500	0.481
		IDR 3500 – IDR 4500	0.864
		>IDR 4500	0.462
IDR 2500 – IDR 3500 (medium)	IDR 3500 – IDR 4500	IDR 3500 – IDR 4500	0.352
		> IDR 4500	0.320
IDR 3500 – IDR 4500 (high)	> IDR 4500	> IDR 4500	0.865
SL Weekday	<IDR 1500 (very Low)	IDR 1500 – IDR 2500	0.000*
		IDR 2500 – IDR 3500	0.001*
		IDR 3500 – IDR 4500	0.000*
		>IDR 4500	0.000*
IDR 1500 – IDR 2500 (low)	IDR 2500 – IDR 3500	IDR 2500 – IDR 3500	0.902
		IDR 3500 – IDR 4500	0.061
		>IDR 4500	0.025*
IDR 2500 – IDR 3500 (medium)	IDR 3500 – IDR 4500	IDR 3500 – IDR 4500	0.100
		> IDR 4500	0.055
IDR 3500 – IDR 4500 (high)	> IDR 4500	> IDR 4500	0.734
SL Weekend	<IDR 1500 (very Low)	IDR 1500 – IDR 2500	0.000*
		IDR 2500 – IDR 3500	0.000*
		IDR 3500 – IDR 4500	0.000*
		>IDR 4500	0.000*
IDR 1500 – IDR 2500 (low)	IDR 2500 – IDR 3500	IDR 2500 – IDR 3500	0.448
		IDR 3500 – IDR 4500	0.052
		>IDR 4500	0.012*
IDR 2500 – IDR 3500 (medium)	IDR 3500 – IDR 4500	IDR 3500 – IDR 4500	0.270
		> IDR 4500	0.114
IDR 3500 – IDR 4500 (high)	> IDR 4500	> IDR 4500	0.668

*Significant difference of ($p < 0.05$) using the Mann Whitney test

The results of the Mann Whitney tests above show that the PA level is significantly different between the income of parents in the very low category or under IDR 1500 and parents with low, medium, high, and very high-income categories ($p < 0.05$). For parents' income in other categories (low, medium, high, and very high) in general there was no significant difference ($p > 0.05$). The SL level also shows almost the same results as the PA level, both on weekdays and weekends. The SL level differs significantly between parents with very low income or under IDR 1500 and parents with low, medium, high and very high-income categories. However, parents with other income categories (low, medium, high and very high) tend to be not significantly different.

DISCUSSION

This study has found that parents with very low incomes (<IDR 1500 per month) have children in adolescence age who are less involved in physical activity than adolescents with higher parental income categories. High family income is positively related to the level of physical activity among adolescents (Kari et al., 2015; Lethbridge-Çejku,



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Schiller & Bernadel 2004; Mo et al., 2005). People with high incomes tend to have a 26% higher exercise energy expenditure and 3% higher exercise intensity than people with the lowest incomes (Meltzer & Jena 2010). Kantomaa et al., (2007) reported that socioeconomic status and participation of adolescents in sports organizations after school hours were related. Wolch et al., (2011) also stated in their research that in urban and suburban areas, poverty is associated with low levels of children's physical activity. Wealthy parents may be less directly involved in their children's physical activities but are able to provide opportunities for their children to join in a physically active environment (Best 2010; Kempermann et al., 2010). Low-income parents face challenges in organising their children's sports participation, including time and scheduling issues, financial constraints, and a lack of necessary information. To address these issues, many municipalities and countries have implemented fee assistance programmes to financially support low-income families and children in sports and recreational activities. These programmes help reduce costs and provide opportunities for low-income children to participate in sports (van Leeuwen et al. 2023). In Indonesia, parents' costly provision of sports facilities has an impact on their children's interest in sports (Armi, Mansur & Maimun Nusufi, 2015).

The relationship between income and physically active participation can be more complex than one might expect. It relies on the premise of utility maximization, where individuals allocate their time to optimize various utility functions, encompassing both consumption of goods and leisure activities (Kari et al., 2015). This statement suggests that although higher incomes provide more opportunities for physical activity (income effect), higher incomes can also increase opportunities for leisure time and, therefore, lower physical activity. As Cottrell et al., (2015) who stated in their research on rural environments that children from low-income families are more involved in physical activity than children from families with other income levels. Parental support for children to do physical activity from low-income families is greater by encouraging their children to be active and play outside (Cottrell et al., 2015). In high- and middle-income countries, there has been a decline in fitness levels among children and youth (Uddin, Mandic & Khan 2019). This could be due to the fact that in high-income countries, children and adolescents are less likely to walk or cycle on their way to school, engage in less outdoor play activities and are more interested in games, social media and other entertainment. (Tomkinson, Lang & Tremblay 2019). This also needs to be considered when children have parents or families with a high income.

In this study, it was also found that the sedentary lifestyle (SL) of adolescents with high-income families tended to be poor. Adolescents with parental income in the middle to upper category were found to have an average of more than 2 hours of sedentary during weekdays. Meanwhile, on weekends, sedentary increased even up to > 5 hours. These results are in accordance with the research of Muthuri et al., (2014) which states that school-age children in Africa with high social status tend to have high levels of sedentary behavior. Middle-upper-income countries tend to have more screen time (Mielke et al., 2017).

Studies over the past years have explored strategies and interventions to promote physical activity among children and adolescents. Despite the implementation of individual strategies, the ecological perspective acknowledges the broader context, including the school environment, as significant determinants in fostering a culture of active and healthy lifestyle. High school students spend a significant portion of their day within the school environment, making school a prime opportunity to improve students' physical activity. A systematic review concludes that multi-component interventions in childcare and schools proved to be effective in promoting physical activity among children and adolescents (Messing et al., 2019).

For a school to run efficiently in a good school culture, instructional leadership is a critical talent for school leaders to have (Ismail, Khatibi, & Azam, 2020). By consulting with various stakeholders, school leaders can design a comprehensive school policy that covers different aspects to promote a healthy and active school environment. This entails health education initiatives, curriculum modifications, and infrastructure improvements. The adoption of a healthy school environment management model must consider the extent to which child-friendly schools are implemented, the learning environment, and the comfort of the school (Sunandar et al., 2022). In recent years, there has been substantial research focuses on school-based interventions aimed at fostering a healthy lifestyle among



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students (eg: Chaudhary et al., 2020; Polet et al., 2019).

A supporting and positive school environment with a comprehensive health education program is needed to make lasting improvement on students' health outcomes and overall well-being. Indonesian Ministry of Education should consider modifying the physical education curriculum by integrating a variety of fitness activities, thereby emphasizing the importance of regular physical engagement. Well-designed physical education classes at least 3 days per week can be a promising way to provide students with adequate physical activity (Uddin, et al., 2020). In addition, Dai (2019) suggests the incorporation of a 'student-centered' approach in designing enjoyable activities and sports aligned with students' preferences. Outside of school time, opportunities to engage in active clubs and extracurricular activities such as hiking, martial arts and dancing should be offered to all students.

A systematic review conducted by Ferreira Silva and colleagues (2022) found environmental barriers including the lack of accessible places, equipment, and facilities as one of the barriers to physical activities in high school students. Therefore, school leaders must ensure the availability of adequate facilities and equipment, and equal access for all students regardless of their socio-economic position. By addressing this strategy, students especially those from socioeconomic vulnerability disadvantaged background will be motivated to participate more actively in physical activities.

In advancing school-based physical activity promotion effort, school leaders should also engage parents and community as essential partners. Considerable evidence has accumulated to show the significant improvement of physical activities when parents support and involve in school-based intervention (eg., Mannocci et al., 2020; Haidar et al., 2019). Engaging them in any school-based physical education program may not only address numerous family-related obstacles, but also empower them to take on facilitative responsibilities in improving their children's physical activities (Willis et al., 2017). One way that can be tried is for physical education teachers to assign students the task of recording physical activity and sports every month by inviting parents to create an environment that is aware of sports.

CONCLUSION

In conclusion, physical activity and sedentary lifestyle among high school students tend to vary according to parental income and occupation in Indonesia country. Students with higher parental incomes tend to have better levels of physical activity, possibly due to their parents' ability to schedule and prioritize physical activity for their families. Higher-income families have greater access to resources, facilities, and organized activities that promote regular physical activity, leading to a more active lifestyle. However, higher-income parents tend to spend less time being sedentary than their lower-income counterparts. This could be attributed to the availability of better facilities for physical activity and less time spent on sedentary activities. Given these findings, it is crucial for policy makers to prioritize the integration of active and healthy lifestyle programs into the curriculum for junior high school students in Indonesia. School leaderships play a vital role in ensuring that students are healthy for they are the leaders of tomorrow.

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