

The Effects of Parental Socioeconomic Status on Children' Physical Activity: Mediating Role of Motivation

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Abstract

Background: An important determinant of health and wellbeing is socioeconomic status as it can influence an individual's exposure to several risk factors across the lifespan. Previous studies, using the self-report scales, have demonstrated that parental socioeconomic status is associated with physical activity in children. However, due to limitations of self-reporting methods, we aimed to assess the association between the parental socioeconomic statuses with accelerometer-measured physical activity among children. Motivation was included as a mediator.

Method: 126 participants (45 girls, mean age of 10.92±1.89 years) wore the accelerometer for seven consecutive days. Parental socioeconomic status was measured by two items, namely, the parents' education level and household income. The Intrinsic Motivation Scale was applied to measure motivation. Structural equation modeling was performed to analyze data.

Results: 74% of our sample was at medium level of parental socioeconomic status. Accelerometer data demonstrated that children spent 74.29% of the total time in sedentary behaviors, 17.20% in light physical activity, and 8.81% in Moderate-to-Vigorous Physical Activity (MVPA). On average, the daily time spent in MVPA was 45.19 minutes, which is below the WHO guideline. In fact, 27.7% (n=35) of children fulfilled the guideline. The results showed that parental socioeconomic status had significant effects on motivation (T=4.129) and MVPA (T=5.097). Moreover, motivation had a significant effect on MVPA (T=2.679). Finally, motivation significantly mediated the association between socioeconomic status and MVPA (P<0.001).

Conclusion: As demonstrated in the findings, the socioeconomic statuses of parents and physical activity have become critical concerns about children. Accordingly, in order to increase the level of MVPA among children, large scale programs should be developed by the stakeholders to increase the parents' socioeconomic status level.

Key Words: Accelerometer, Children, Motivation, Physical activity, Socioeconomic status.

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1- INTRODUCTION

Physical activity simply refers to any movement of the body with the help of muscles and bones that is associated with energy expenditure (1-2). Numerous studies have shown that regular physical activity plays a very important role in maintaining and promoting a healthy lifestyle (3-4). Regular physical activity is associated with positive consequences such as improving physical fitness and strength, increasing self-confidence, reducing the risk of cardiovascular disease, diabetes, cancer, osteoporosis, as well as reducing the risk of obesity and related diseases (1-5). However, research has shown that modern life has led to a tendency for people to lead a sedentary life, and this trend is also evident in children (6). Research has shown that currently only 20 to 25 percent of girls and 35 to 40 percent of boys follow the WHO guidelines for at least 60 minutes of moderate-to-vigorous physical activity per day (7). In Iran, some studies have shown that Iranian boys and girls do not follow international guidelines for daily physical activity (8-13). Given these facts, physical activity for children and adolescents has become a key topic in research on sport and health over the past decades. Identifying factors associated with declining levels of physical activity of children will help in the development of measures and governmental initiatives to prevent or delay the onset of future chronic diseases.

An important determinant of health and wellbeing is socioeconomic status as it can influence an individual's exposure to several risk factors across the lifespan. Research suggests that children with lower socioeconomic status are at a higher risk for overweight and obesity and are exposed to home and neighborhood environments that are uncondusive to health-promoting behaviors (14-15). Parental socioeconomic status is usually

reflected in parents' education, occupational status, and family income, as well as environmental factors (such as the affordability and accessibility of sports facilities and good community environment). In fact, some evidence has shown that parental socioeconomic status directly affects children and adolescents from different age groups in physical activity and sport (16-18). In fact, those children with a higher level of socioeconomic status have more possibility to participate in physical activity and sport. It is believed that parental financial support can secure the standard level of children's physical activity participation. For instance, George et al. (17) suggested that if family income statistically increased by one unit, children's moderate-to-vigorous PA time (min/day) is expected to increase by 6%. A systematic review concludes that children whose parents with a lower level of socioeconomic status are less motivated to engage in sports activities (15). However, these studies have not mostly used accelerometers to measure physical activity objectively and, therefore, reliability of these studies remain questionable. Therefore, this issue needs to be further investigated by using accelerometers for evaluating physical activity objectively. Thus, the first purpose of this study was to investigate the association between parental socioeconomic statuses and the objectively measured physical activity among children. Moreover, we investigated motivation as a mediator in the relationship between socioeconomic statuses and the objectively measured physical activity among children (19). Altogether, this study aimed 1) to characterize the objectively measured physical activity pattern among children with different socioeconomic status, and 2) to examine the association between parental socioeconomic status and the objectively measured physical activity

with the mediating role of motivation among children.

2- METHODS

2-1. Participants

The present study utilized a descriptive-correlation approach. 126 children (45 girls) attending regular primary schools of Tehran, Iran in 2020 participated in this study (mean age of 10.92 ± 1.89 years). The statistical sample was selected based on a convenience sampling method.

2-2. Measures

2-2.1. Parental socioeconomic status

Parental socioeconomic status was measured by two items, namely, parents' education level and household income (16). Parents were asked to detail their highest education qualification to date. Based on the information provided, three separate categories for parent education were created including low (score 1), medium (score 2), and high (score 3). Household income was measured by asking the parents to report their annual household income. Accordingly, three separate categories for parent education were created including low (score 1), medium (score 2), and high (score 3). The total score was obtained by calculating the average scores of educational status and income. As such, a score between 0 to 1 represents low parental socioeconomic status, 1 to 2 represents medium parental socioeconomic status, and 2 to 3 shows high Parental socioeconomic status. Cronbach's α of the three items in the present study is 0.92, which is very good. Moreover, the validity estimations showed that CVR was 0.88 and CVR was 0.92.

2-2.2 Physical activity

Physical activity was measured objectively using the accelerometer ActiGraph wGT3X-BT (ActiGraph LLC, Pensacola, FL, USA). The ActiGraph accelerometer

has good validity and reliability (20). The participants wore an accelerometer for seven consecutive days and then, the data was analyzed using the respective software ActiLife v6.13.4.

2-2.2 Motivation

Motivation for physical activity in leisure-time was measured by using four questions that were designed on the basis of Intrinsic Motivation Scale (21). Each question was scored on a Likert scale from completely disagree (1) to completely agree (7). The reliability of this questionnaire was measured in this study and Cronbach's alpha coefficient was 0.90. Moreover, the validity estimations showed that CVR was 0.92 and CVR was 1.00.

2-3. Data analysis

Descriptive analysis including means and standard deviations was used to describe the research variables. Spearman correlation test was utilized to measure bidirectional associations between research variables. Finally, the structural equation method by using SmartPLS was used to investigate the effects of parental socioeconomic status on Moderate-to-Vigorous Physical Activity (MVPA) with a mediation of motivation. Significant levels were considered at the alpha level of 0.05.

3- RESULTS

3-1. Descriptive data

The descriptive characteristics of the study sample are presented in **Table 1**. A total of 126 participants (45 girls) attended this study. Means of age, BMI, physical activity, parental socioeconomic status, and motivation of our sample are presented in **Table 1**. As shown in table 1, 74% of our sample was at medium level of parental socioeconomic status. Accelerometer data demonstrated that children spent 8.81% of their total time in MVPA, 17.20% in light physical activity and 74.29% in sedentary behaviors. On

average, the daily time spent in MVPA was 45.19 minutes, which is below the

WHO guideline. In fact, 27.7% (n=35) of children fulfilled the guideline.

Table-1: Descriptive data

Variables	Mean \pm SD	
Age (years)	10.92 \pm 1.89	
BMI	19.55 \pm 1.28	
Sedentary Time%	74.29 \pm 8.07	
Light Physical Activity%	17.20 \pm 5.24	
MVPA%	8.81 \pm 2.66	
Daily MVPA (min)	45.19 \pm 15.29	
Motivation	4.22 \pm 2.40	
Parental Socioeconomic Status	N	Percent
Low	20	16%
Medium	93	74%
High	13	10%

3-2. Bidirectional relationships

The results showed that parental socioeconomic status was directly and significantly associated with motivation ($r=0.429$, $P<0.001$) and MVPA ($r=0.397$, $P<0.001$). Moreover, there was a significant direct association between motivation and MVPA ($r=0.470$, $P<0.001$).

3-5. Structural equation modeling

The results of the path analysis are presented in **Table 2** and **Fig. 1**. The

results showed that parental socioeconomic status had significant effects on motivation ($T=4.129$) and MVPA ($T=5.097$). Moreover, motivation had significant effects on MVPA ($T=2.679$). Finally, motivation significantly mediated the association between socioeconomic status and MVPA ($P<0.001$). The results of model fit showed that Goodness of Fit Index (GOF) was 0.701, indicating a very good fit of data with the research model.

Table-2: Results of path analysis between research variables

No	Path	β	T-value
1	parental socioeconomic status \Rightarrow motivation	0.269	4.129
2	parental socioeconomic status \Rightarrow MVPA	0.280	5.097
3	motivation \Rightarrow MVPA	0.194	2.679
		Z	P-value
4	parental socioeconomic status \Rightarrow motivation \Rightarrow MVPA	4.120	$P<0.001$

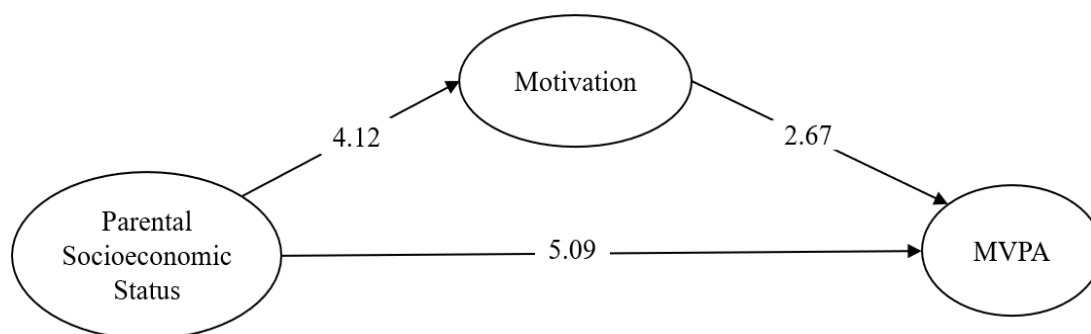


Fig. 1: Results of path analysis in the form of T-Values

4- DISCUSSION

Previous studies showed that parental socioeconomic status directly affects children and adolescents' participation in physical activities and sports (14-18). However, they are based on self-report questionnaires, where its validity remains questionable. The present study was designed to investigate this issue among children, by the use of accelerometers to objectively assess physical activity. Moreover, motivation was added into the research model as a mediator. Accelerometer data demonstrated that children spent 74.29% in sedentary behaviors, 17.20% in light physical activities, and 8.81% in MVPA. On average, the daily time spent in MVPA was 45.19 minutes, which is below the WHO guideline. In fact, 27.7% of children fulfilled the guideline. These results are in accordance with previous findings (9, 14). Moreover, about 74% of our sample was at medium level of parental socioeconomic status.

Regarding parental socioeconomic status, the results showed that parental socioeconomic status had significant effects on physical activity. The present findings are in accordance with those of previous studies indicating positive effects of parental socioeconomic status on children and adolescents' participation in physical activities (14-18). Therefore, it can be stated that the increase in parental

socioeconomic statuses can lead to an improvement in children's participation in physical activities. These findings, also, support ecological systems theory (22), which holds that children's sports participation is affected by a series of environmental systems around the person, such as parental socioeconomic status, parental support, peer support, and school sports facilities (16).

Moreover, motivation was directly related to physical activity, which is consistent with the findings of previous studies (8, 13, 19). Moreover, motivation mediated the association between parental socioeconomic status and physical activity, highlighting again the positive impact of motivation on the participation of children and adolescents in physical activity and sport (13, 19). Internal motivation is an important factor in the occurrence of physical activity, because it insists on the occurrence of physical activity in the absence of any external motivation (8). Then, the parents can encourage students to perform more physical activity through enhancing their intrinsic motivation. The sense of enjoyment over one's actions leads to a sense of competence and satisfaction, which in turn leads to the promotion of motivation and, eventually, more participation in physical activities.

Strength of the present study was the fact that we used accelerometers to objectively evaluate the levels of physical activity of

children which made it possible to present a valuable image of the pattern of physical activity in children. The main limitation of the present study is its relatively small sample size. Further research studies with larger sample sizes are needed to increase the reliability of data.

5- CONCLUSIONS

This cross-sectional study revealed that children did not accumulate the recommended 60 minutes of MVPA per day. However, the socioeconomic status of the parents was directly associated with children's participation in physical activities and sports. Here, motivation was a significant mediator. Eventually, as demonstrated in the findings, the socioeconomic statuses of parents and physical activity have become critical concerns about children. Accordingly, in order to increase the level of MVPA among children, large scale programs should be developed by the stakeholders to increase the parents' socioeconomic status level.

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