Research article

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Physical activity and sedentary behaviors among adolescents in Ho Chi Minh City, Vietnam

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Abstract

Background: Obesity/overweight has becoming an emerged epidemic, in which the youth is getting familiar with the western and passive life. This paper's aim is to describe physical activity (PA) and sedentary behaviours of adolescents in Ho Chi Minh City (HCMC).

Methods: This is a secondary data analysis of a cross-sectional study conducted on 1358 junior high school students in 2019. Multistage cluster sampling was applied and participants were interviewed by questionnaires. Time spent in moderate to vigorous PA, transportation as well as screen time were calculated for each student. Multiple logistic regression was used to examine associations between levels of time spent for sedentary, PA, transportation and socio-demographic factors.

Results: Boys spent more PA time (40.2 to 48.2 mins/day) than girls (29.4 to 31.6 mins/day). Time spent studying after class was on average 135 minutes/day. Multiple logistic regression showed that the odds of active transportation in boys and girls were increased as the age increased and the highest was found in the oldest age group (ORmale = 2.89, 95% CI: 1.41, 5.95; ORfemale = 3.24, 95% CI: 1.33, 4.11, respectively). In contrast to age, the odds of active transportation in boys and girls were decreased as the wealth index increased.

Conclusions: There is a clear gender difference in PA and sedentary behaviors in HCMC adolescents. PA was negatively associated with household economic status. Efforts to reduce overweight/obese adolescents should focus on increasing activity levels of adolescents, especially females, older students and those from richer families or parents with higher education.

Key words: Physical Activity, Sedentary, Vietnamese, Adolescents.

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1. INTRODUCTION

During the last few years, overweight and obesity are increasing in all age groups, especially in adolescents, due to the rapid economic and social development in Ho Chi Minh City (HCMC), Vietnam [1]. Physical activity plays important role in the increasing prevalence of overweight/obesity [2,3]. However, physical activity (PA) and sedentary behaviours of adolescents have not been well reported, especially in the relationship with age, gender, and socio-economic factors.

Results from other Asian countries have described PA and inactivity levels of adolescents and have showed the associations between physical activity and age, gender, socio-economic factors [4-7]. There was a trend towards decreased physical activity and increased inactivity across countries [8, 9] and factors of home and school environments were especially associated with children's PA [10].

This paper is to describe PA and sedentary behaviours of adolescents and to examine their differences in socio-demographic factors in urban districts of HCMC.

2. METHODS

Study design

This was a secondary data analysis of a cross sectional survey which was conducted on a representative sample of junior high school students in grades 6-9 of HCMC (ages 11-16 years) in 2019. The sample was chosen using a multistage stratified cluster sampling approach. In the first stage schools were selected within two strata (wealthy and less districts) by systematic random sampling using a proportionate to population size (total number of students in grades six to nine in each school) method. In the second stage, classes were selected by systematic random sampling from the list of classes organized by grade within each school sampled from stage one. The sample consisted of 683 boys and 675 girls. The study was approved by the ethics committee for medical research of the Pham Ngoc Thach University of Medicine (PNTUM). Written consent was obtained from both the students and their parents prior to data collection.

A questionnaire to investigate school environment such as school yard, physical education, availability and accessibility of sport facility at school, foods sold at school canteen and so on was sent to school representatives for self-response. Parents were also asked to answer questions that investigated household economic data, number of people in the family, parents' education, and occupation. The students had to complete a questionnaire assessing their exposure to a variety of environmental elements at home, school and their neighbourhoods after their date of birth was explored, and weight, height were measured.

Physical activity

The Adolescent Physical Activity Recall Questionnaire (APARQ) [11] which was developed and validated among Australian adolescents, was modified for use in Vietnamese [12]. The questionnaire asked students to think about a normal week and report separately participation in organised and non-organised physical activities. For each activity, students were asked to report the frequency each week and the duration of their participation each time they did the activity. In HCMC there are few differences in physical activities between summer and winter school terms. Thus the original questionnaire (which did differentiate between seasons) was modified to assess usual physical activity during the school terms and the annual summer holidays instead. The questionnaire recorded information about activities at school, before and after school hours, during weekends, and summer holidays. In HCMC the school term lasts 9 months and the summer holidays last 3 months. Mode and duration of transportation to and from school in a usual week were also recorded through self-report.

Sedentary activities

Additional questions were added to the PA recall questionnaire to record sedentary behaviours on both weekdays and weekends, including time spent watching TV, playing computer games or video games. These questions were modified for Vietnamese youth from the Adolescent Sedentary Activity Questionnaire (ASAQ) [12, 13].

Analysis

Stata Version 15.0 (StataCorp, 2017) and 'svy' commands were used to adjust for clustering of observations within schools. To assess economic status, ownership of fourteen different assets were used to construct a household wealth index using the principal components method to assign a weight for each asset [14]. The wealth index was divided into quintiles with the lowest was the poorest and the highest was the richest. Body mass index (BMI) was calculated as weight/height2 (kg/m2) and BMI cut off values proposed by IOTF [15] were used to define overweight and obesity whereas those proposed by Tim Cole [16] were used to define underweight. Therefore, BMI status was categorized into three groups: underweight weight, healthy weight and overweight/obesity.

The median and inter-quartile range (IQR) (minutes/day) were presented for each category of physical or sedentary activities. The time spent in each activity was calculated

by multiplying the frequency of participation with the duration per session taking account the "weights" of school term (9 months) and summer holidays (3 months), and also the role of organised and non-organised activities. Each PA was assigned a MET (kcals.kg-1.min-1) value [17]. In this study the average time spent per day for vigorous activities (VPA) (METs ≥ 6.0) or moderate activities (MPA) (3.5 – 5.9 METs) was examined. Time spent in moderate vigorous PA (MVPA) was calculated for each student by summing the time spent in all activities with a MET value ≥ 3 and expressed as minutes/day.

Level of PA was divided into two groups: physically active and insufficiently active, according to evidence based physical activity for school aged youth which requested moderately intense exercise at least 60 minutes per day [18].

Sedentary time including average time spent for transportation to and from the school, watching TV, and playing computer/video games was examined as a continuous variable. Time spent for sedentary behaviour/screen creation was categorised into < 2 hours, and ≥ 2 hours per day [18]. The differences of the time spent for physical and sedentary activities between gender, age group, household economic levels, BMI categories etc were compared using Mann-Whitney or Krusal-Wallis test. Multiple logistic regression was applied to see the association between levels of time spent for sedentary, PA, transportation and socio-demographic factors. Before being put into the models time spent for TV viewing, playing video game and small screen (combination of TV viewing and playing video game) were re-classified into two categories: < 2 hours and ≥ 2 hours. Only variable(s) that were significantly associated with the outcome (p-value < 0.05) were retained in the model.

3. RESULTS

The study consisted of 1358 students from 31 schools, of which 309, 378, 411 and 260 students from grade 6, 7, 8 and 9, respectively. Complete data were available in 1342 students (98.9%).

Screen time was described in table 1. Boys spent more screen time (watching TV or playing video/computer games) than girls (85.7 mins/day vs 43.3, p < 0.001). Time spent watching TV or playing video/computer games (screen time) differed by age group, family economic status and BMI status in each gender. Screen time was associated with family economic status in both gender (p=0.002 and 0.013 for boys and girls, respectively). In girls, screen time was also associated with overweight/obesity status (OR adjusted = 1.8, 95% CI: 1.1, 3.1). In boys, family economic status was significantly associated with screen time (OR adjusted = 2.1, 95% CI: 1.3, 3.1).

As described in Table 2, the median of time spent in MVPA (weighted for the duration of school term and summer time holidays) was approximately 88 and 78 minutes per day in boys and in girls, correspondingly. Boys spent more time on PA than girls both in school term and summer holidays (48.2; 40.2 vs 43.0; 35.0 mins/day, respectively). Time spent for MVPA in boys was all significantly higher than in girls across 4 age groups (p < 0.001). The older they were, the less time they spent on MVPA, in both school term and summer holidays. However, this time did not significantly vary across levels of family economic status types, children's BMI status and levels of small screen time. Multiple logistic regression model showed that after adjusting for other factors, age group was significantly associated with time spent for MVPA in both genders.

The active transportation to/from school was described in Table 3. Only 30 to 32% of boys and girls commute actively to/from school, of which the percentages of boys walking, bicycling to school and doing both were: 2%, 13%, and 15%, while those in girls were 3%, 15% and 15%, respectively. There was no significant difference in the type of school transportation between boys and girls. On average, students spent 15 minutes per day on school transportation (data not shown). The oldest group has the lowest percentage of inactive transportation to/from school in comparison to younger students. Table 3 also revealed that adolescents from the poorest households were more likely to bike or walk to/

from school than those from other household wealth index groups in both gender. However, these differences were not significant. Besides, overweight students had higher percentage of being taken to/from schools on a motorbike or in a car than their normal counterparts (75.2% vs 68.4% in boys, 65.8% vs 67.6% in girls).

Both models in boys and girls showed that age group and family economic status were statistically significant associated with active transportation. The odds of active transportation in boys and girls increased as age increased. The highest odds was found in the oldest age group (≥ 14 years old) (OR= 2.89, 95% CI: 1.41, 5.95 in boys and OR= 3.24, 95% CI: 1.33, 4.11 in girls, respectively). In contrast, the odds of active transportation in boys and girls decreased as the wealth index increased. The lowest odds were in the richest group: (OR = 0.46, 95% CI: 0.20, 1.04 in boys, OR = 0.29, 95% CI: 0.17, 0.49 in girls, respectively).

4. DISCUSSION

This is the first study describing in details about PA and sedentary behaviours of the junior high school students in HCMC.

The low level of PA and associated socio-demographic factors of the HCMC adolescents was the same as that reported for counterparts in China [19], where the pressure of high academic achievement could be the reason to explain the longer time spent in studying and shorter time in TV watching among school youth. In our study, time spent watching TV was lower than that reported in Malaysia and the Philippines (33.5% reported watching TV more than 2hrs vs 44.8% of Malaysian and 48% of Filipino) [20, 21]. This may be explained by the fact that our adolescents spent much more time in studying after class. This finding highlights the level of the school-work burden of Vietnamese students and this sedentary behaviour is likely to be an important contributor to overweight and obesity issue in this population.

Passive school transportation was common in the present study (69%). Since the children had important pressure to concentrate and spend more time studying and also for extra class after school, they were more usually driven by their parents. This fact again decreases time spent on PA and increases the inactivity level of these children. Furthermore, parents with higher levels of education usually pay more attention to their children's study and encourage them to attend more extra classes than let them participate in further physical activities. This may explain the higher prevalence of sufficient PA among those whose parents have higher levels of education. Similar to findings from Chinese study [22], adolescents in our study were more active commuting to school when the age increased. The security reason that parents are usually afraid of letting their children walk or ride to school by themselves as they are still in younger age may be the explanation for this difference.

It has been reported that students from low-income families in Western countries had limited access to public resources that support PA and consequently, they became more inactive [23, 24]. However, Vietnamese children from the wealthiest families were the least likely to be active. This is probably because parents from wealthier households usually provide their children with a "modern" life including up-to-date recreational facilities like TV, computers, internet and other "labour saving" household devices and have enough resources to commute them to school.

The inverse association between age group and PA (the older the students were, the less time they spent on MVPA) found in this study is similar to the findings from the China study [25]. In agreement with the review of Sallis et al [26] that youth PA is a complex behavior determined by many factors, we noted that personal (demographic, biological, psychological, behavioral), social, and physical environmental factors should be taken into account when studying physical and sedentary activity.

In our study, a well designed, representative sample of adolescents was selected from the population. The findings hence reflect the extent of the problem in the adolescent population in HCMC. Like many epidemiological studies in Asia, the response rate was high (99%), it may due to the good

cooperation between investigators and school teachers, clear explanation of the purpose of the study to the students and their parents and the parents' attention to the nutritional status of their children. The strength points of this study suggest that the findings could be applied and generalized for other urban areas of Vietnam.

There were a number of potential limitations in our study. Firstly, subjects could have difficulty in accurately recalling their weekly physical and sedentary activities. However, we had experienced interviewers who could probe for further details. Secondly, given the cross-sectional nature of this study, it is not possible to determine whether a cause-and-effect relationship exists between the determinants and physical activities. Thirdly, the data was collected in 2019; hence individual behaviours, society and environment may have changed over time and the prevalence of overweight and obesity among adolescents of HCMC may be influenced. However, to the best of our knowledge, this was so far the first study investigating PA and sedenatry behaviors of adolescents in HCMC in details. A similar trend of adolescent overweight and obesity was found (higher in males than in females) in more recent data [27] indicating that results from the 2019 study were still useful and problems in PA and sedentary behaviours among adolescents in HCMC may still need to be addressed.

Despite these limitations, the findings from this study provide an overview of PA and sedentary levels across age groups, gender, and household economic status. National recommendations of adequate level of PA for Vietnamese adolescents are needed and should be vital part of national promotion of PA in youth.

In conclusion, the socioeconomic development and urbanization of HCMC lead to the lifestyle which is less active among adolescents. Efforts to reduce overweight/obese adolescents should focus on increasing activity levels of adolescents, especially females, older students and those from richer families or parents with higher education.

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Table 1: Small screen time for boys and girls by age, socioeconomic, BMI status and physically active status (n = 1,358)

	Boys					Girls				
	Number of subjects	**Television (min/d) Median (IQR)**	**Computer games (min/d) Median (IQR)**	**Total small screen time[a] (min/d) Median (IQR)**	**OR[*] for ≥ 120 min/d total small screen time (95% CI)**	**Number of subject**	**Television (min/d) Median (IQR)**	**Computer games (min/d) Median (IQR)**	**Total small screen time[a] (min/d) Median (IQR)**	**OR[*] for ≥ 120 min/d total small screen time (95% CI)**
Total	683	25.7	60.0	85.7		675	19.3	43.3	62.6	
		(13.6, 42.9)	(25.7, 108.6)	(77.1, 173.6)			(13.6, 42.9)	(8.6, 77.1)	(50.0, 143.6)	
Age										
≤ 11	164	25.7	57.9	83.6	1.0	169	21.4	27.9	49.3	1.0
		(13.6, 42.9)	(24.3, 94.3)	(72.9, 117.4)	-		(13.6, 42.9)	(2.9, 61.4)	(32.9, 124.3)	-
12	191	21.4	60.0	81.4	1.1	177	23.6	34.3	57.9	1.3
		(13.6, 42.9)	(25.7, 107.1)	(72.9, 168.6)	(0.5, 2.0)		(13.6, 42.9)	(8.6, 90.0)	(47.1, 154.3)	(0.7, 2.4)
13	192	23.6	55.7	79.3	1.3	190	23.6	46.8	70.4	1.5
		(13.6, 42.9)	(21.4, 110.4)	(76.4, 184.3)	(0.7, 2.3)		(13.6, 42.9)	(17.1, 94.3)	(64.3, 165.0)	(0.8, 2.8)
≥ 14	136	25.7	70.7	96.4	1.6	139	23.6	48.6	72.2	1.1
		(13.6, 40.0)	(32.1, 120.0)	(87.5, 173.6)	(0.9, 2.7)		(13.6, 53.6)	(8.6, 81.4)	(49.3, 140.0)	(0.4, 2.6)
Household wealth index										
Poorest (1st q'tile)	136	13.6	42.9	56.5	1.0	141	13.6	14.3	27.9	1.0
		(13.6, 32.1)	(8.6, 92.9)	(55.7, 150.0)	-		(13.6, 38.6)	(0.0, 48.6)	(24.3, 111.4)	-
2nd quintile	138	21.8	57.9	79.7	1.4	123	13.6	21.4	35.0	1.3
		(13.6, 42.9)	(25.7, 94.3)	(65.7, 162.9)	(0.7, 2.9)		(13.6, 45.0)	(0.0, 68.6)	(23.6, 114.4)	(0.8, 2.2)
3rd quintile	129	21.4	63.2	84.6	1.5	142	21.4	38.6	60.0	1.9

	Boys					Girls				
	Number of subjects	**Television (min/d) Median (IQR)**	**Computer games (min/d) Median (IQR)**	**Total small screen time[a] (min/d) Median (IQR)**	**OR* for ≥ 120 min/d total small screen time (95% CI)**	**Number of subject**	**Television (min/d) Median (IQR)**	**Computer games (min/d) Median (IQR)**	**Total small screen time[a] (min/d) Median (IQR)**	**OR* for ≥ 120 min/d total small screen time (95% CI)**
		(13.6, 42.9)	(27.9, 120.0)	(72.9, 184.3)	(0.83, 2.83)		(13.6, 47.6)	(8.6, 77.1)	(46.4, 143.6)	(1.1, 3.3)
4th quintile	129	31.6	60.0	91.6	1.6	143	23.6	47.1	70.7	1.9
		(13.6, 25.7)	(25.7, 87.9)	(77.1, 173.6)	(0.7, 3.3)		(13.6, 25.7)	(17.1, 94.3)	(64.3, 171.4)	(1.3, 2.7)
Richest (5th q'tile)	130	42.9	66.4	109.3	2.108	119	45.9	50.0	95.9	2.1
		(23.6, 77.1)	(25.7, 120.0)	(81.4, 192.9)	(1.3, 3.3)		(23.6, 77.1)	(18.2, 84.6)	(57.9, 156.1)	(1.4, 3.1)
BMI category										
Healthy weight	484	13.6	60.0	73.6	1.0	580	13.6	34.3	47.9	1.0
		(13.6, 42.9)	(25.7, 111.4)	(57.0, 171.4)	-		(13.6, 42.9)	(8.6, 75.0)	(37.0, 132.9)	-
Underweight	55	13.6	62.0	75.6	1.1	31	13.6	56.4	70.0	1.1
		(13.6, 38.6)	(24.6, 99.6)	(72.9, 162.9)	(0.6, 2.2)		(13.6, 42.9)	(0.0, 90.7)	(67.1, 145.7)	(0.4, 2.8)
Overweight/obesity	150	25.7	71.8	97.5	1.3	64	25.7	41.4	67.1	1.8
		(26,7, 63.6)	(25.7, 102.9)	(84.3, 205.7)	(0.8, 2.0)		(25.7, 68.6)	(8.6, 111.4)	(52.9, 208.6)	(1.1, 3.1)
MVPA										
< 60 min/d	217	20.4	60.0	80.4	1.0	338	16.4	34.3	50.7	1.0
		(13.6, 42.9)	(30.0, 107.1)	(74.3, 162.9)	-		(13.6, 45.0)	(8.6, 72.9)	(44.3, 128.6)	-
≥ 60 min/d	461	25.7	65.4	91.1	1.0	337	21.4	37.5	58.9	1.1
		(13.6, 60.0)	(25.7, 110.0)	(81.4, 187.1)	(0.5, 1.8)		(13.6, 43.6)	(10.0, 83.6)	(57.9, 158.6)	(0.7, 1.5)

IQR = inter quartile range; BMI = body mass index; MVPA = moderate and vigorous physical activity

a Total time spent for TV viewing and playing video/PC games

* Adjusted for all other variables in the table

Table 2: Daily time spent in total moderate and vigorous physical activity (MVPA) by gender and socio-demographic characteristics during school term and summer holidays (n = 1,358)

	Boys				Girls				Total			
	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)
		Median (IQR)	Median (IQR)			Median (IQR)	Median (IQR)			Median (IQR)	Median (IQR)	
Total	683	48.2	40.2		675	31.6	29.4		1,358	43.0	35.0	
		(34.5, 59.1)	(24.1, 61.5)			(16.5, 59.2)	(16.8, 51.5)			(23.4, 59.2)	(19.5, 57.4)	
Age												
≤ 11 years old	164	66.6	60.1	1.00	169	43.9	26.7	1.00	333	59.7	50.8	1.00
		(53.9, 72.8)	(51.7, 69.1)	-		(33.0, 68.5)	(15.6, 48.7)	-		(38.2, 72.5)	(24.2, 63.9)	-
12 years old	191	52.1	37.5	10.21	177	30.2	36.3	1.08	368	46.0	37.2	1.45
		(31.5, 58.4)	(25.3, 60.4)	(3.46, 30.10)		(19.9, 65.9)	(23.1, 56.2)	(0.65, 1.79)		(23.4, 59.5)	(24.8, 58.5)	(0.96, 2.18)
13 years old	192	44.8	30.8	19.34	190	23.5	31.1	2.25	382	38.6	31.0	2.77
		(30.6, 51.0)	(18.4, 52.4)	(6.26, 59.74)		(13.4, 52.3)	(17.8, 53.1)	(1.52, 3.34)		(16.2, 51.2)	(18.0, 52.7)	(1.93, 13.96)
≥ 14 years old	136	42.0	27.3	39.07	139	16.2	38.6	3.53	275	32.1	25.5	5.45
		(30.2, 47.8)	(13.8, 44.2)	(14.02, 108.88)		(11.7, 35.9)	(16.4, 77.1)	(1.76, 7.09)		(14.3, 47.1)	(11.9, 44.2)	(3.35, 8.86)
Household wealth index												
Poorest (1st qu'tile)	136	49.2	39.9	1.00	141	29.0	29.4	1.00	277	42.3	35.7	1.00
		(37.8, 58.0)	(25.3, 62.7)	-		(15.3, 55.3)	(17.7, 47.2)	-		(21.0, 57.1)	(21.0, 57.2)	-
2nd quintile	138	48.1	38.9	0.72	123	33.2	27.3	0.82	261	43.0	33.5	0.83
		(34.2, 58.8)	(22.6, 57.2)	(0.31, 1.64)		(19.9, 53.0)	(16.5, 54.1)	(0.40, 1.70)		(26.0, 57.2)	(18.7, 55.8)	(0.50, 1.39)
3rd quintile	128	48.1	34.3	0.84	142	32.3	51.4	0.74	270	41.7	35.9.	1.04

	Boys				Girls				Total			
	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)	Number of subjects	School term	Summer holidays	Adjusted OR for ≥ 60 min/d MVPA (95% CI)
		Median (IQR)	Median (IQR)			Median (IQR)	Median (IQR)			Median (IQR)	Median (IQR)	
		(35.1, 60.2)	(7.9, 83.6)	(0.46, 1.54)		(15.6, 59.5)	(22.9, 94.3)	(0.54, 1.03)		(22.1, 59.9)	(20.3, 58.8)	(0.76, 1.43)
4th quintile	129	47.5	34.3	0.97	143	32.0	51.4	1.28	285	42.8	12.9	1.46
		(32.8, 59.9)	(4.3, 81.4)	(0.44 2.13)		(18.0, 61.0)	(21.4, 107.1)	(0.73, 2.22)		(22.0, 60.0)	(1.1, 47.1)	(0.93, 12.28)
Richest (5th qu'tile)	130	48.1	25.7	0.57	119	31.6	57.9	0.74	250	44.2	12.9	0.78
		(34.6, 58.5)	(1.1, 71.1)	(0.28, 1.17)		(15.2, 67.8)	(26.4, 111.4)	(0.46, 1.18)		(24.5, 60.6)	(1.1, 42.9)	(0.57, 1.05)
BMI category												
Healthy weight	484	47.7	38.9	1.00	580	32.1	29.4	1.00	1,064	41.9	32.9	1.00
		(33.0, 57.5)	(22.6, 61.5)	-		(16.6, 59.1)	(16.8, 52.0)	-		(22.0, 58.0)	(18.7, 57.2)	-
Underweight	55	47.1	37.0	1.10	31	21.6	36.6	1.47	86	40.6	36.7	1.41
		(33.7, 57.0)	(24.1, 52.9)	(0.51, 2.40)		(14.5, 34.5)	(25.7, 49.2)	(0.48, 4.54)		(18.7, 52.7)	(24.2, 49.9)	(0.72, 2.79)
Overweight/obesity	150	52.3	46.7	0.88	64	34.7	26,7	1.21	214	50.6	41.3	0.93
		(40.7, 66.0)	(27.2, 62.5)	(0.52, 1.50)		(18.6, 65.9)	(16.8, 47.7)	(0.79, 1.86)		(32.8, 66.0)	(23.2, 59.7)	(0.53, 1.64)
Small screen time												
< 120 min/d	217	48.1	40.0	1.00	338	30.2	29.5	1.00	555	40.3	33.5	1.00
		(33.7, 57.0)	(24.5, 59.1)	-		(15.4, 56.3)	(16.7, 53.0)	-		(20.8, 57.0)	(18.8, 56.4)	-
≥ 120 min/d	461	47,7	39.2	0.81	337	30.5	30.4	1.06	798	44.8	33.5	1.23
		(36.7, 58.1)	(22.7, 61.8)	(0.49, 1.50)		(15.3, 60.6)	(17.9, 49.2)	(0.81, 1.37)		(22.1, 58.8)	(20.5, 56.8)	(0.85, 1.76)

IQR = inter quartile range; BMI = body mass index

Table 3: Prevalence of active and inactive travel to school by gender and socio-demographic characteristics (n = 1,358)

	Boys				**Girls**			
	Number of subjects	**% active travel[a]**	**% inactive travel[b]**	**OR* for active travel (95% CI)**	**Number of subjects**	**% active travel[a]**	**% inactive travel[b]**	**OR* for active travel (95% CI)**
Total	683	29.9	70.1		675	32.0	68.0	
Age								
≤ 11 years old	164	21.8	78.2	1.00	169	27.9	72.1	1.00
				-				-
12 years old	191	28.9	71.1	1.39	177	29.1	70.9	1.22
				(0.67, 2.86)				(0.69, 2.16)
13 years old	192	24.9	75.1	1.91	190	25.1	74.9	1.40
				(0.92, 3.99)				(0.77, 2.56)
≥ 14 years old	136	44.7	55.3	2.89	139	46.2	53.8	3.24
				(1.41, 5.95)				(1.33, 4.11)
Household wealth index								
Poorest (1st qu'tile)	136	25.0	75.0	1.00	141	32.1	67.9	1.00
				-				-
2nd quintile	138	24.4	75.6	0.69	123	26.9	73.1	0.40
				(0.30, 1.58)				(0.21, 0.76)
3rd quintile	128	28.0	72.0	0.50	142	34.3	63.7	0.49
				(0.28, 0.91)				(0.28. 0.85)
4th quintile	129	17.6	82.4	0.33	143	16.7	83.3	0.33
				(0.17,)				(0.17, 0.63)
Richest (5th qu'tile)	130	44.7	55.3	0.46	119	47.6	52..4	0.29
				(0.20, 1.04)				(0.17, 0.49)

	Boys				Girls			
	Number of subjects	**% active travel[a]**	**% inactive travel[b]**	**OR* for active travel (95% CI)**	**Number of subjects**	**% active travel[a]**	**% inactive travel[b]**	**OR* for active travel (95% CI)**
BMI category								
Healthy weight	484	31.6	68.4	1.00	580	32..4	67.6	1.00
				-				-
Underweight	55	26.7	73.3	1.28	31	23.5	76.5	0.90
				(0.54, 3.06)				(0.47, 1.74)
Overweight/ obesity	150	24.8	75.2	0.70	64	34.2	65.8	0.17
				(0.38, 1.31)				(0.99, 1.77)
MVPA								
< 60 min/ day	217	37.6	62.4	1.00	338	35.2	64.8	1.00
				-				-
≥ 60 min/day	466	29.6	70.4	0.80	337	31.8	68.2	0.86
				(0.42, 1.55)				(1.61, 1.20)
Small screen time								
< 120 min/d	167	53.3	46.6	1.00	231	60.5	39.5	1.00
				-				-
≥ 120 min/d	154	49.4	50.7	0.93	118	60.1	39.9	1.11
				(0.67, 1.27)				(0.72, 1.72)

BMI = body mass index; MVPA = moderate and vigorous physical activity
a Walking and bicycling b Motorbike and car
* Adjusted for all other variables in the table