

Overweight, obesity and walking time among children and adolescents: findings from the School Screening Program in 2016 and comparison with findings since 1998

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Summary

- Within the School Screening Program, around 16 school nurses measure selected health markers every year, including weight, height and walking time to/from school, in all ~5000 students attending C2, P4, S1 and S4 classes in all schools.
- Overweight and obesity are defined along standard age and sex specific criteria by the International Obesity Task Force (IOTF).
- In 2016, weight and height were measured in 3759 students from 5545 eligible students, a participation rate of 68%.
- In 2016, the prevalence of combined overweight or obesity (i.e. excess weight) was 20.1% in boys and 24.2% in girls and the prevalence of obesity alone was 8.8% in boys and 8.7% in girls. This prevalence is very high by international standards.
- The prevalence of overweight/obesity markedly increased between 1998 and 2016, including in recent years.
- In 2016, around 50% of children report to walk less than 15 minutes per day and around 70% less than 30 minutes.
- Walking time to go to/from school decreased in the late 1990s but is fairly stable since the early 2010s.
- Walking time is not associated with body weight. This does not negate the fact that regular physical activity is a key component of good health but it emphasizes that unhealthy nutrition as the main underlying cause of excess weight (i.e. excess calories intake).
- The continued secular increase in body weight of children, which is consistent with the continued increase of body weight in adults in adult surveys in Seychelles, stresses the need to address the societal causes of overweight (the “obesogenic environment”) through interventions in all sectors, e.g. banning advertisement and promotion of junk foods and beverages in schools and on TV, introduction of a tax on sugar drinks, develop mandatory food labeling for prepackaged foods, develop standards for school meals, increasing the number of physical activity at school, etc.
- Continued monitoring of overweight/obesity in school children of Seychelles is an essential mechanism to guide policy. The School Screening Program should be strengthened, including by enabling school nurses to have sufficient time to perform the screening in all schools and provide related counseling on healthy lifestyles to children.

A) The school health program

The School Screening Program is run in schools by the Ministry of Health. Around 15-20 school nurses screen all students of C2, P4, S1 and S4 of all schools (~5500 children) every year since 1998. The mean age of students at these grades is 5.4, 9.2, 12.5 and 15.5 years, respectively. Anthropometric variables (weight and height) and blood pressure are measured and students are asked about tobacco use, alcohol use, substance use, and physical activity. The use of same methods over years allows valid comparison of the findings over years. Overweight and obesity in children are defined along the standard age and sex specific criteria of the International Obesity Task Force (IOTF).

B) Results related to overweight and obesity in 2016

Participation to the school screening program in 2016 was 68% (3759 from 5545 eligible students in C2, P4, S1 and S4). Non participation relate to different factors, particularly to the fact that school nurses often lack time to complete the screening program due to competing duties at health centre level. Good organization by the school nurses and maintaining adequate equipment and facilities for screening are important factors for the smooth functioning of the screening program.

Table 1. Prevalence (in percent) of students who are overweight or obese in 2016 according to school and grade

School	C2		P4		S1		S4	
	N	%	N	%	N	%	N	%
AAP	51	23.5	68	22.1				
ABO	81	17.3	75	22.7	121	26.4	64	21.9
ACA	36	13.9	48	10.4				
AET	44	11.4	58	27.6				
ARO	65	16.9	77	20.8	133	30.1	67	25.4
BEA	71	8.5	81	30.9				
BEL					0	0	0	0
BLA	34	14.7	41	17.1				
BOM	29	13.8	28	35.7				
BSA	66	7.6	58	20.7				
BVA	51	31.4	67	26.9	0	0	0	0
CAS	48	10.4	30	40.0				
ERI					0	0	0	0
GAM	15	40.0	19	31.6				
GAP	52	23.1	45	20.0	126	23.8	44	18.2
GLA	20	25.0	27	22.2				
IND	0	0	0	0	0	0	0	0
LAD	30	20.0	37	35.1	45	24.4	39	23.1
LMI	27	14.8	14	14.3				
LRE	19	5.3	25	24.0				
LRO	120	13.3	105	35.2				
MFL	70	10.0	91	24.2	100	28.0	85	24.7
PER	51	15.7	63	20.6				
PGL	24	8.3	0	0				
PLA	46	10.9	52	32.7	133	22.6	81	23.5
PLS	129	17.1	137	23.4	126	23.8	113	23.0
TAK	26	19.2	31	3.2				
Total	1,205	15.5	1,277	24.8	784	25.6	493	23.1

C) Trends in overweight and obesity between 1998 and 2016

Table 1 show that the prevalence of combined overweight or obesity was 15.5% at crèche level, 24.8% at P4 level, 25.6% at S1 level and 23.1% at S4 level. Differences in results between different schools may relate to real differences or can be due to random variation due to the fairly small numbers of children in individual schools.

Table 2. Trends in the prevalence (in percent) of combined overweight or obesity, respectively obesity, between 1998 and 2016

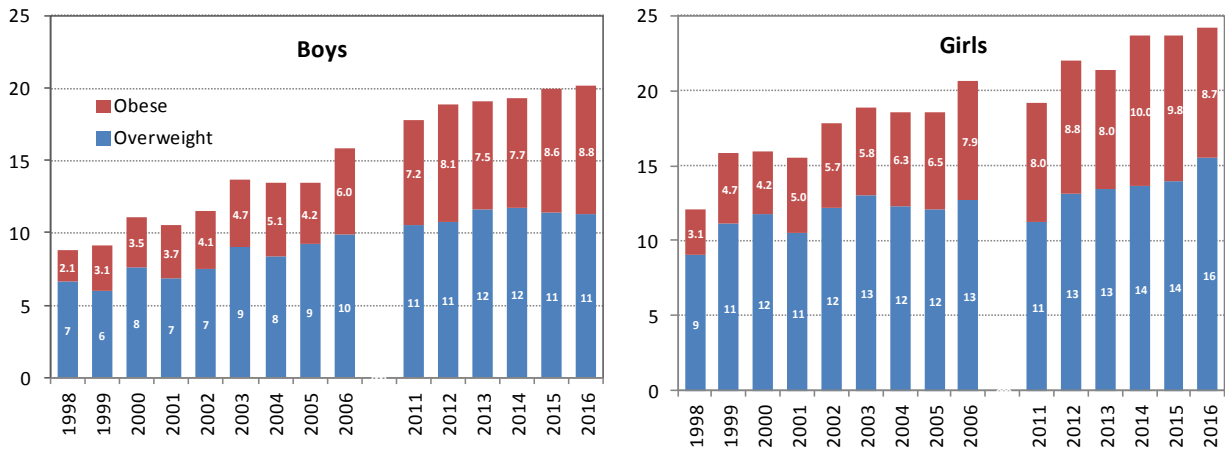
Year	Boys					Total	Girls				
	N	C2	P4	S1	S4		C2	P4	S1	S4	Total
Overweight or obese											
1998	3'023	7.4	8.4	10.0	9.4	8.8	9.9	12.4	10.8	15.4	12.1
1999	5'492	8.5	9.1	11.3	7.5	9.1	12.3	15.2	18.1	17.7	15.8
2000	3'647	8.7	11.3	14.2	10.4	11.1	10.1	16.7	18.6	18.4	16.0
2001	5'387	7.6	13.7	11.6	9.1	10.5	11.7	17.3	16.9	16.0	15.5
2002	5'138	10.7	11.6	14.8	9.1	11.5	13.7	18.5	21.5	17.7	17.8
2003	5'793	11.5	15.0	15.8	12.5	13.7	13.3	19.9	21.9	20.4	18.9
2004	4'853	11.9	14.6	15.9	11.6	13.5	14.0	19.9	19.4	21.1	18.6
2005	5'616	8.7	13.8	18.3	12.8	13.4	13.0	20.6	20.4	20.4	18.6
2006	5'446	9.5	18.7	20.4	15.0	15.9	14.2	22.4	23.8	22.0	20.6
2011	4'715	11.5	20.9	21.5	17.2	17.8	12.2	19.0	23.5	22.2	19.2
2012	4'835	12.2	18.4	26.1	18.9	18.9	16.4	24.0	23.4	24.0	22.0
2013	4'220	13.1	17.8	26.3	19.0	19.1	15.6	24.7	25.2	20.2	21.4
2014	4'618	11.7	20.6	26.7	18.3	19.3	18.2	25.6	26.2	24.8	23.7
2015	4'259	15.0	18.1	27.5	19.2	20.0	17.0	23.7	28.1	26.1	23.7
2016	3'759	14.6	22.0	23.9	20.0	20.1	16.4	27.6	27.3	25.6	24.2
Obese											
1998	3'023	1.6	2.3	2.2	2.5	2.1	3.2	1.9	2.8	4.4	3.1
1999	5'492	3.2	3.2	3.5	2.4	3.1	4.0	4.7	4.7	5.3	4.7
2000	3'647	2.9	3.0	4.9	3.1	3.5	2.4	4.5	3.7	6.4	4.2
2001	5'387	3.2	4.7	4.1	2.8	3.7	3.9	7.0	4.7	4.2	5.0
2002	5'138	4.5	4.8	3.9	3.1	4.1	5.3	5.7	5.4	6.3	5.7
2003	5'793	3.3	5.7	6.4	3.3	4.7	4.1	6.7	7.1	5.4	5.8
2004	4'853	6.0	6.2	4.6	3.8	5.1	5.9	7.2	6.4	5.8	6.3
2005	5'616	4.4	5.1	4.4	2.8	4.2	5.5	8.1	6.5	5.8	6.5
2006	5'446	3.6	7.9	6.8	5.5	6.0	5.2	9.0	8.3	9.0	7.9
2011	4'715	4.9	6.6	10.3	7.0	7.2	5.8	7.2	9.2	9.6	8.0
2012	4'835	5.3	8.8	10.9	7.4	8.1	6.2	8.8	9.6	10.5	8.8
2013	4'220	5.7	6.3	10.3	7.7	7.5	5.9	9.9	9.4	6.7	8.0
2014	4'618	4.2	9.6	9.7	7.2	7.7	8.5	10.4	9.5	11.7	10.0
2015	4'259	6.5	8.6	10.3	8.9	8.6	6.7	9.7	12.2	10.6	9.8
2016	3'759	7.6	10.2	8.9	8.6	8.8	5.7	10.4	7.9	10.6	8.7

Note: Percent in "Total" is based on the average of the prevalence rates in the 4 grades.

Table 2 shows that the prevalence of overweight has more than doubled between 1998 and 2016. In 2016, 20.1% of boys and 24.2% of girls aged 5-16 years had combined overweight or obesity, and 8.8% of boys and 8.7% of girls had obesity in 2016. These prevalence rates are very high by international standards.

Figure 1 shows that the prevalence of combined overweight or obesity (in blue) and obesity (in red) increased steadily over time in both boys and girls. The rates seem on a continued increase in recent years, with no sign of plateauing.

Figure 1. Prevalence (in percent) of children and adolescents aged 5-16 years with overweight (in blue) and obesity (in red) according to sex and calendar years between 1998 and 2016



D) Walking time per day to go to/from school

Walking time increases with age and findings are fairly similar in boys and girls. This may reflect increasing autonomy of adolescents vs. younger children. Around 40-50% of boys and girls in S1 and S4 walk less than 20 minutes per day.

Figure 2. Walking time according to grade and sex between 1998 and 2016

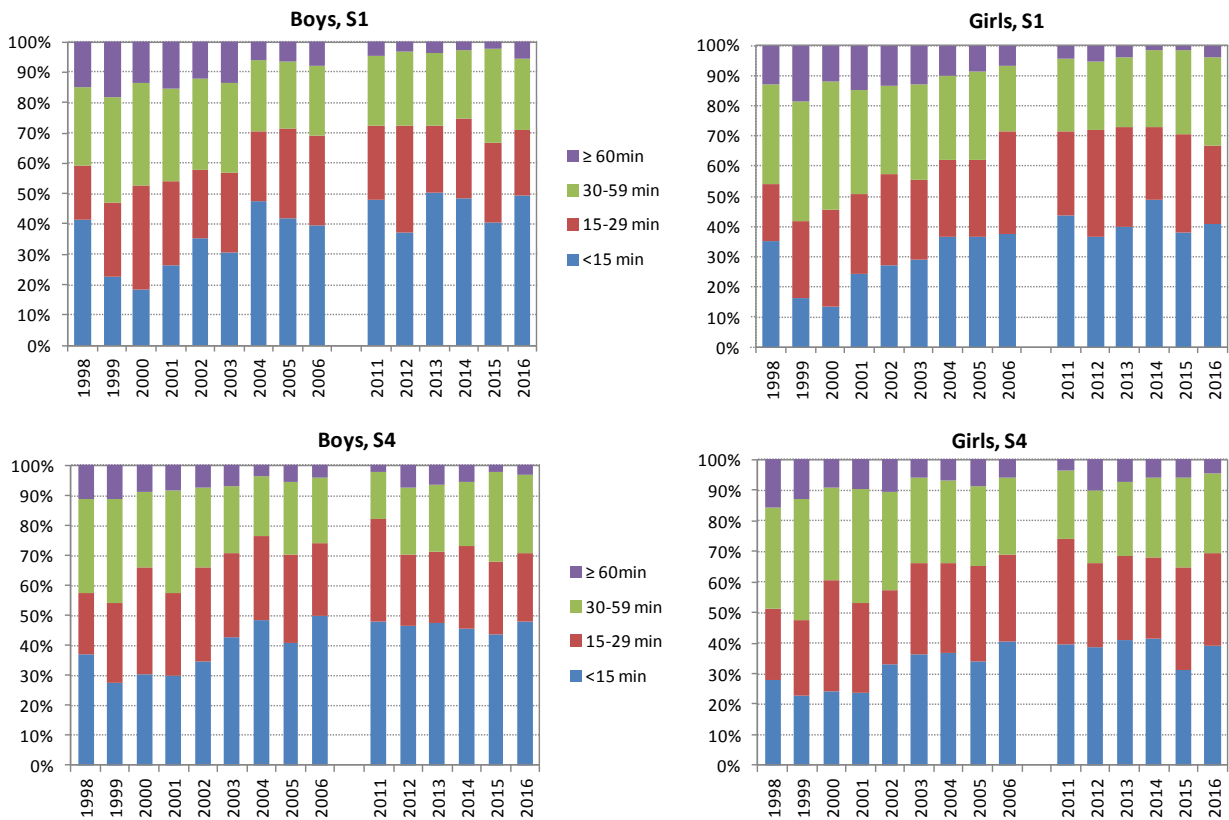


Table 3. Age- and sex-adjusted association between body mass index and walking time among students in S1 and S4 in 2016

	Regression coefficient	SE	P value
Walking time (minutes)	0.006	0.009	0.492
Age (years)	0.630	0.094	0.000
Sex (boys vs girls)	-1.012	0.281	0.000

Table 3 shows that walking time is not statistically associated with body mass index in adolescents (P value for walking time is >0.05). The analysis is limited to students in S1 and S4 in 2016. This finding is not unexpected; other studies in Seychelles (e.g. METS study among young adults where physical activity was measured accurately with accelerometry) and studies in other countries repeatedly show that physical activity has generally only little impact on body weight. This does not negate the benefits of physical activity on health, but it emphasizes that excess calorie intake is the main driving force of the obesity epidemic.

Recommendations

- 1) There is a need to further educate students of all ages on healthy nutrition, including the importance of smaller portions, the need to prefer water (including tap water) to soft drinks, “flavored water” or fruit juices, and the need to have physical activity on most days of the week.
- 2) The large scale of the overweight problem in Seychelles (also in adults) implies the need to address the societal causes of obesity through interventions in multiple sectors, e.g. “health in all policy” and “whole of society” approaches.
- 3) This includes, *inter alia*, the need to:
 - a) Enforce the National School Nutrition Policy, including increased availability of healthy foods in all settings (including in school tuck shops and canteens),
 - b) Sustain the provision of free cold water in all schools through water fountains (as an alternative to soft drinks and fruit juice packets),
 - c) Restrict or ban, through regulations, the marketing of energy dense foods (“junk foods”) in the mass media,
 - d) Develop mandatory food labeling for prepackaged foods (particularly with regard to total calorie and sugar contents),
 - e) Develop standards for healthy meals such as “green fork meals” in canteens (including school meals), tuck shops and take away food (quantifying minimal/maximal amounts/types of foods (e.g. less than X grams of rice, more than Y grams of vegetables per take away portion, etc),
 - f) Promote physical activity in the school setting, particularly the strict implementation of two (or if possible three) periods of physical activity per week for all students, with a focus on physical activity that is suitable to all children, including girls or obese children,
 - g) Further develop physical activity programs in different settings outside of school hours,
 - h) Develop measures focusing on improving urban shaping enabling students to come to school by foot or by bike, including safe side-walks or bike lanes (e.g. between Plaisance, Perseverance and Victoria).
 - i) Continued monitoring of overweight/obesity and other health markers in schools is essential to guide health policy. In particular, it is important that the school health nurses can dedicate sufficient time for effective implementation of all the components of the School Health Program,
 - j) Of note the Seychelles National NCD Strategy (adopted by Cabinet in 2016) has set the target of a 0% relative increase of obesity between 2010 and 2025, consistent with the same global goal agreed by all WHO member states. The prevalence of overweight and obesity in children is a routine indicator that countries have agreed to report on a regular basis to WHO.