

Prevalence of overweight and obesity in children and adolescents in Seychelles in 2011: results of the School Screening Program

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Summary and recommendations

- The School Screening Program includes the measurement of weight and height in all children of all schools of C2, P4, S1 and S4.
- Overweight and obesity in youth are defined along standard age and sex criteria.
- In 2011, 4721 out of a total of ~6000 eligible children participated in the screening and had BMI measured.
- In 2011, the prevalence of overweight (including obesity) was 16.6% in boys and 17.9% in girls.
- The prevalence of obesity was 6.5% in boys and 7.2% in girls.
- Compared to 1998-2006, the prevalence of overweight/obesity in 2011 increased in boys but seemed to decrease in girls.
- These trends need to be confirmed with data to be collected in 2012.
- Some overweight/obese children may have avoided participating in the screening, which could lead to some underestimation of the true prevalence of overweight/obesity.
- In view of severe health, social and economic consequences of obesity, the high prevalence of overweight and obesity in youth in Seychelles stresses the need for a comprehensive set of interventions.
- Children found to be obese should be offered adequate school-based weight control programs.
- More generally, high priority should be given to multi-sectoral policies aimed at reversing the obesogenic nature of the environment, particularly in the school setting.
- This includes, *inter alia*, the enforcement of the National School Nutrition Policy; increased availability of healthy foods and limitation of energy-dense foods canteens and tuck shops in schools; availability of water fountains in all schools; multifaceted education programs; regulations to limit the marketing of junk food in the mass media; adequate labeling of food packages; and measures to favor physical activity at school.
- Finally, continued monitoring of the epidemic of overweight/obesity in youths in Seychelles is essential to guide health policy and adequate resources are needed to maintain the School Screening Program.

A) Background information on the school health program

The School Screening Program (SSP) is conducted jointly by the Ministry of Health and the Ministry of Education. Every year, 15-20 twenty school nurses screen, on a part time basis, all children of C2, P4, S1 and S4 of all schools (total of ~6000 children per year). The School Screening Program includes several health indicators, including the measurement of weight, height, blood pressure and a few questions on lifestyle factors (tobacco use, alcohol use, substance use, and physical activity). The program has been implemented for several decades but the systematic collection and analysis of data on overweight and other cardiovascular risk factors started in 1998. Because of various difficulties, results could not be reliably analyzed in 2007-2010. Fortunately, the program was back on track in 2011 with the active support of various officials in the Ministry of Health, including the director of nursing, the school health program manager, the Unit for Prevention and Control of Cardiovascular Disease (UPCCD) and, most importantly, the continued efforts from all school nurses.

B) Results related to overweight and obesity in 2011

Participation to the screening program in 2011 was good (4721 children seen of a total of 6032, overall participation rate of 78%), as shown in **Table 1**. The list of all eligible children is provided by the Ministry of Education early in the year and some changes can subsequently occur later (e.g. children moving to different schools). Less than maximal participation to the screening relate to different factors. Some children avoid participation to the screening. A few school nurses do not have enough time to complete screening in schools because of competing duties at health center level. Good organization by school nurses and adequate facilities for screening (e.g. examination bay) are also important factors for a good conduct of the screening program.

Table 1. Number of eligible children for screening and participation rates by school in 2011

School		Number of eligible children	Participation (%)	School		Number of eligible children	Participation (%)
Anse aux Pins	AAP	144	86	GA Praslin	GAP	370	82
Anse Boileau	ABO	544	73	Glacis	GLA	49	90
Anse Etoile	AET	99	83	Independant	IND	194	100
Anse Royale	ARO	609	74	La Digue	LDI	189	96
Au Cap	ACA	72	96	La Misere	LMI	41	80
Baie Lazare	BLA	71	90	La Retraite	LRE	56	79
Baie Ste Anne	BSA	133	35	La Rosiere	LRO	349	79
Beau Vallon	BVA	400	87	Mont Fleuri	MFL	518	82
Bel Eau	BEA	206	75	Plaisance	PLS	611	86
Bel Ombre	BOM	65	80	Pointe Larue	PLR	416	53
Belonie	BEL	285	70	Port Glaud	PGL	63	73
Cascade	CAS	106	76	Takamaka	TAK	73	47
English River	ERI	314	90				
GA Mahé	GAM	55	93	Total		6032	78

The overall prevalence of overweight (including obesity) was 17% in boys and 18% in girls (**Table 2**). The overall prevalence of obesity was 7% in both sexes. The prevalence was lower in Crèche than in the other grades, and in boys in S4 compared to boys in S1.

Table 2. Prevalence of overweight (including obesity) and obesity by school grade

	Boys		Girls	
	N	%	N	%
Overweight				
C2	575	11.5	539	12.2
P4	632	20.9	655	19.1
S1	687	18.6	595	20.3
S4	488	15.8	550	20.0
Total	2382	16.9	2339	18.0
Obesity				
C2	575	5.0	539	5.9
P4	632	6.6	655	7.2
S1	687	8.7	595	8.1
S4	488	6.1	550	7.8
Total	2382	6.8	2339	7.3

The prevalence of overweight/obesity did not differ in a consistent manner between different regions of Seychelles (**Table 3**). High and low prevalence of overweight was found both in different schools in Victoria and in different schools in other regions and islands. The observed variations likely reflect mainly the small numbers of the samples in each school (i.e. random variation). These differences emphasize the need for regular check of the equipment (weight scale and stadiometers) in all schools to ensure that systematic errors do not occur.

Table 3. Prevalence of overweight (including obesity) in S1 and S4 students, by sex and school

	Boys			Girls			All	
	N	% ov/ob		N	% ov/ob		N	% ov/ob
PLR	82	23.2	ABO	124	26.6	MFL	243	24.3
MFL	106	22.6	MFL	137	25.5	PLR	145	23.4
BVA	130	22.3	ARO	166	24.1	ARO	314	22.6
IND	52	21.2	PLR	63	23.8	BVA	235	22.6
ARO	148	20.9	BVA	105	22.9	ABO	237	21.9
PLS	135	19.3	PLS	127	22.0	PLS	262	20.6
ABO	113	16.8	LDI	60	21.7	IND	97	18.6
BSA	122	16.4	BSA	93	17.2	LDI	107	16.8
LDI	47	10.6	IND	45	15.6	BSA	215	16.7
ERI	143	9.8	BEL	103	9.7	ERI	265	9.1
BEL	97	7.2	ERI	122	8.2	BEL	200	8.5
Total	1175	17.4	Total	1145	20.2	Total	2320	18.8

C) Comparison of results in 2011 with findings in 1998-2006

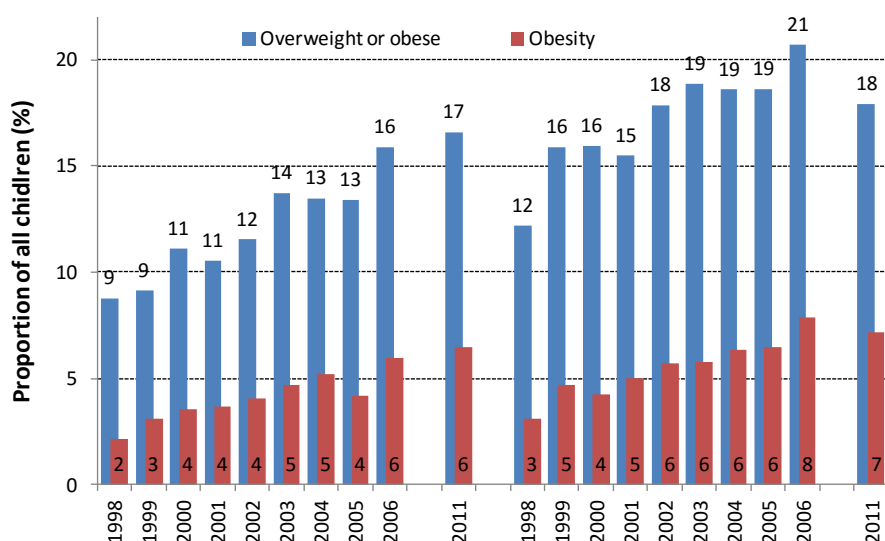
Participation to the screening program in 2011 was similar to that in previous years (Table 4). Of note, the screening program faced various difficulties 2007-2010 and no reliable data are available for this period.

Table 4. Number of participants in the Screening Health Program in 1998-2011

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2011	Total
C2	724	1,304	874	1,128	1,182	1,301	1,203	1,206	1,159	1,114	11,195
P4	661	1,412	1,116	1,470	1,163	1,608	1,474	1,464	1,304	1,287	12,959
S1	807	1,409	716	1,466	1,556	1,564	1,018	1,508	1,520	1,282	12,846
S4	832	1,371	941	1,323	1,238	1,320	1,159	1,438	1,463	1,038	12,123
Total	3,024	5,496	3,647	5,387	5,139	5,793	4,854	5,616	5,446	4,721	49,123

Over time (1996-2011), the prevalence of overweight (including obesity) and of obesity increased in boys but the prevalence seemed to stabilize or even slightly decrease in girls (Figure 1).

Figure 1. Prevalence of overweight (including obesity) and of obesity alone in 1998-2011



An increasing prevalence of overweight/obesity among boys but stabilizing or decreasing prevalence among girls will need to be confirmed in 2012. However, divergent trends over time in boys and girls are compatible with recent studies on perception of body weight that showed larger social acceptance of obesity among boys than among girls in Seychelles (e.g. boys report higher ideal BMI ideals than girls; obese girls are bullied more often than obese boys). In adults, the prevalence of obesity was higher in women of low vs. high socio-economic status but higher in men of high vs. low socio-economic status. Lower social acceptance of obesity in females than males may underlie different motivation and weight control behaviors according to sex.

The high prevalence of overweight/obesity in children and adolescents in Seychelles calls for several actions:

- 1) Children found to be obese should be offered adequate school-based weight control programs.
- 2) More generally, high priority should be given to multi-sectoral policies aimed at reversing the obesogenic nature of the environment, particularly in the school setting.
- 3) This includes, *inter alia*, the enforcement of the National School Nutrition Policy; increased availability of healthy foods and limitation of energy-dense foods in canteens and tuck shops in schools; availability of water fountains in all schools; multifaceted education programs; regulations to limit the marketing of junk food in the mass media; adequate labeling of food packages; and measures to favor physical activity at school, etc.

- 4) Finally, continued monitoring of the epidemic of overweight/obesity in youths in Seychelles is essential to guide health policy and adequate resources are needed to maintain the School Screening Program.