

Prevalence of overweight and obesity in children and adolescents in Seychelles: Results of the School Screening Program in 2013

Ministry of Health, Public Health Department, Victoria, Republic of Seychelles, 11 April 2014

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Summary and recommendations

- Assessing the trends in the prevalence of overweight/ obesity is of vital importance to guide policy and programs for weight management in the population, in both adults and children.
- Within the school screening program, around 17 school nurses are expected to measure every year the weight and height of all the around 5000-6000 students attending C2, P4, S1 and S4 classes and around 4000-5000 children actually undergo this screening.
- Overweight and obesity in children are defined along the standard IOTF age and sex specific criteria.
- In 2013, weight and height were measured in 4220 children from a total of around 6000 eligible children.
- The prevalence of combined overweight and obesity was 19.7% in boys and 20.7 % in girls and the prevalence of obesity alone was 7.5% in boys and 8% in girls.
- Compared to previous years, the prevalence of overweight /obesity in 2013 seemed to have not increased in girls but continued to increase in boys.
- The high and still not decreasing prevalence of overweight/ obesity among youths in Seychelles stresses the need to strengthen preventive and treatment interventions.
- Children found to be obese should be offered adequate individual based weight control programs, possibly carried out within the school premises.
- 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 in school tuck shops; availability of water fountains in all schools; multifaceted nutrition education programs, regulations to limit the marketing of junk foods on the mass media, adequate labeling of food packages; and measures to favour physical activity at school and in other settings.
- Finally continued monitoring of the epidemic of overweight/obesity in youths of Seychelles is essential to guide policy and adequate resources are needed to maintain the school screening program.

A) Background information and methods used in the school health program

Within the School Screening Program, 15-20 school nurses screen all children of C2, P4, S1 and S4 of all schools (~6000 children) every year. Mean age of children at these grades are 5.4, 9.2, 12.5 and 15.5 years, respectively. Children are also asked about tobacco use, alcohol use, substance use, and physical activity. Anthropometric variables and blood pressure are measured. The systematic collection and analysis of data started in 1998. Because of various difficulties, results could not be reliably analyzed in 2007-2010 but the program was back on track in 2011. The use of a same methodology since 1998 allows to directly and reliably comparing findings over years.

B) Results related to overweight and obesity in 2013

Participation to the school screening program was satisfactory in 2013, but a bit less than in previous years (4220 children seen out of a total of approximately 6000 eligible ones). Less than maximal participation to the screening program can relate to different factors, e.g.; a trend for obese children to decline participation; lack of time of school nurses to complete the screening program due to competing duties at health centre level. Good organization by the school nurses and adequate facilities for screening are also important factors for a good conduct of the screening program.

Table 1 shows that the prevalence of combined overweight or obesity was, overall, 14.4% in children at crèche, 21.3% in children at P4 level, 25.7% in children at S1 level and 19.6 % in children at S4 level. There is a substantial variation between schools. Differences may relate to some actual differences between regions but also to random error (relatively low numbers of children in some schools) or some unwanted systematic differences (e.g. if stadiometers are not installed perfectly or if some weighing scales are not well calibrated in some places). The prevalence seemed to be slightly lower in some schools from south of Mahé and higher in schools around Victoria, particularly in private schools (Independent School).

Table 1. Prevalence (in percent) of children who are overweight or obese in 2013 according to school and school grade. Figures are based on screening of 4220 children from all schools attending C2, P4, S1 and S4 in 2013.

| | Crèche | | P4 | | S1 | | S4 | |
|-------|--------|------|------|------|-----|------|------|------|
| | N | Prop | N | Prop | N | Prop | N | Prop |
| AAP | 66 | 19.7 | 60 | 18.3 | | | | |
| ABO | 58 | 10.3 | 65 | 18.5 | 140 | 23.6 | 137 | 19.7 |
| ACA | 43 | 11.6 | 45 | 15.6 | | | | |
| AET | 51 | 9.8 | 44 | 25.0 | | | | |
| ARO | 68 | 16.2 | 56 | 23.2 | 182 | 22.5 | 101 | 22.8 |
| BEA | 42 | 14.3 | 52 | 19.2 | | | | |
| BLA | 31 | 19.4 | 34 | 8.8 | | | | |
| BOM | 27 | 11.1 | 20 | 20.0 | | | | |
| BSA | 44 | 9.1 | 67 | 17.9 | | | | |
| BVA | 53 | 15.1 | 63 | 27.0 | 103 | 24.3 | 115 | 21.7 |
| CAS | 26 | 7.7 | 35 | 25.7 | | | | |
| ERI | 73 | 6.8 | | | 139 | 30.2 | 112 | 13.4 |
| GAM | 22 | 18.2 | 22 | 27.3 | | | | |
| GAP | 62 | 16.1 | 57 | 21.1 | 105 | 23.8 | 122 | 18.0 |
| GLA | 13 | 0.0 | 26 | 42.3 | | | | |
| IND | 66 | 18.2 | 45 | 28.9 | 50 | 34 | 48 | 35.4 |
| LDI | 27 | 22.2 | | | | | 39 | 20.5 |
| LMA | 41 | 4.9 | | | | | | |
| LMI | 20 | 5.0 | | | | | | |
| LRE | 29 | 13.8 | 17 | 29.4 | | | | |
| LRO | 66 | 18.2 | | | | | | |
| MFL | 78 | 24.4 | 69 | 23.2 | 79 | 29.1 | 112 | 17.0 |
| PER | 28 | 28.6 | | | | | | |
| PGL | 22 | 4.5 | 40 | 17.5 | | | | |
| PLR | 30 | 16.7 | 56 | 19.6 | 112 | 24.1 | 106 | 18.9 |
| PLS | 69 | 13.0 | 127 | 17.3 | 78 | 26.9 | 128 | 18.8 |
| TAK | 22 | 9.1 | 35 | 22.9 | | | | |
| Total | 1177 | 14.4 | 1035 | 21.3 | 988 | 25.7 | 1020 | 19.6 |

C) Comparison of findings in 2013 vs. previous years

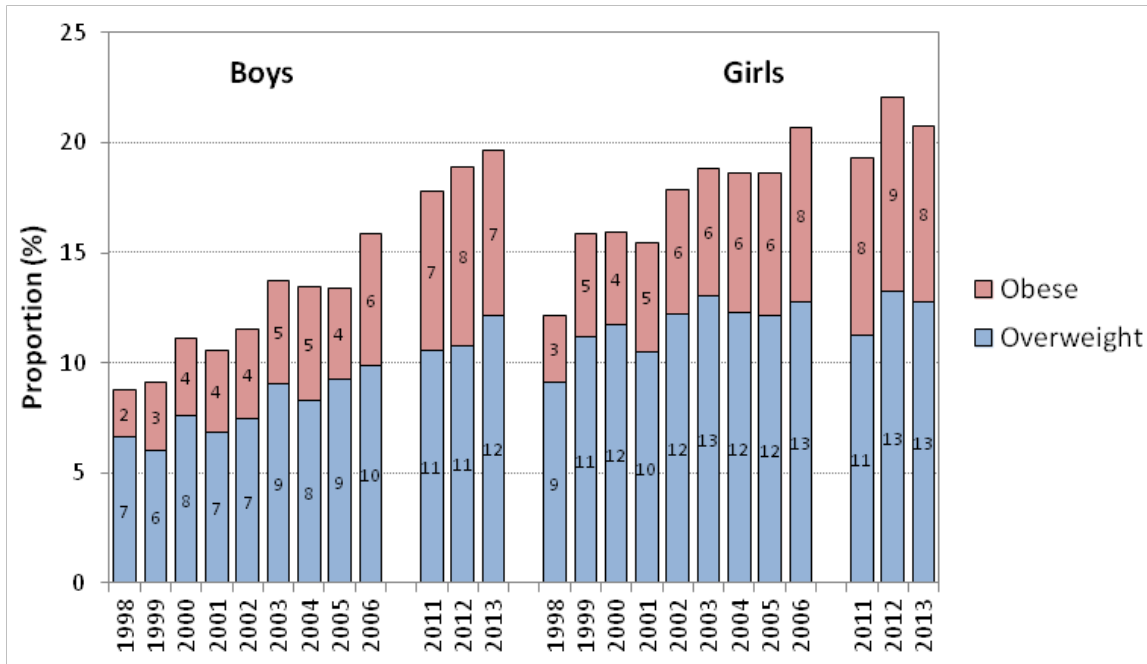
Table 2 shows that the prevalence of overweight more than doubled between 1998 and 2013. In 2013 19.7% in boys and 20.8 % in girls had combined overweight and obesity, and 7.5% in boys and 8 % in girls had obesity in 2013. The prevalence was generally lower in boys than in girls, in Crèche than in other grades, and in boys in S4 compared to boys in S1.

Table 2. Prevalence (in percent) of children with overweight or obesity combined or with obesity alone between 1998 and 2013, according to calendar year, sex, and school grade (Screening of approximately 4000-5000 children in C2, P4, S1 and S4 every year, except in 2007-2010; total of 59'314 measurements)

| | Boys | | | | | Girls | | | | |
|------|----------------------------|------|------|------|------|-------|------|------|------|------|
| | C2 | P4 | S1 | S4 | All | C2 | P4 | S1 | S4 | All |
| | Overweight or obese | | | | | | | | | |
| 1998 | 7.4 | 8.4 | 10.0 | 9.4 | 8.8 | 9.9 | 12.4 | 10.8 | 15.6 | 12.2 |
| 1999 | 8.5 | 9.1 | 11.4 | 7.5 | 9.1 | 12.3 | 15.4 | 18.1 | 17.7 | 15.9 |
| 2000 | 8.7 | 11.3 | 14.2 | 10.4 | 11.1 | 10.1 | 16.7 | 18.6 | 18.4 | 16.0 |
| 2001 | 7.6 | 13.7 | 11.6 | 9.2 | 10.6 | 11.7 | 17.3 | 16.9 | 16.0 | 15.5 |
| 2002 | 10.7 | 11.6 | 14.8 | 9.1 | 11.5 | 13.6 | 18.7 | 21.5 | 17.7 | 17.9 |
| 2003 | 11.5 | 15.0 | 15.8 | 12.7 | 13.7 | 13.3 | 19.9 | 21.9 | 20.4 | 18.9 |
| 2004 | 11.9 | 14.6 | 15.9 | 11.6 | 13.5 | 14.0 | 19.9 | 19.4 | 21.1 | 18.6 |
| 2005 | 8.7 | 13.8 | 18.3 | 12.8 | 13.4 | 13.0 | 20.6 | 20.5 | 20.4 | 18.6 |
| 2006 | 9.5 | 18.7 | 20.4 | 15.0 | 15.9 | 14.2 | 22.4 | 24.1 | 22.0 | 20.7 |
| 2011 | 11.5 | 20.9 | 21.7 | 17.2 | 17.8 | 12.4 | 19.1 | 23.5 | 22.2 | 19.3 |
| 2012 | 12.2 | 18.4 | 26.1 | 18.9 | 18.9 | 16.5 | 24.0 | 23.6 | 24.0 | 22.0 |
| 2013 | 15.6 | 17.7 | 26.3 | 19.0 | 19.7 | 13.1 | 24.6 | 25.2 | 20.2 | 20.8 |
| | Obese | | | | | | | | | |
| 1998 | 1.6 | 2.3 | 2.2 | 2.5 | 2.1 | 3.2 | 1.9 | 2.8 | 4.4 | 3.1 |
| 1999 | 3.2 | 3.2 | 3.5 | 2.4 | 3.1 | 4.0 | 4.7 | 4.8 | 5.3 | 4.7 |
| 2000 | 3.1 | 3.0 | 4.9 | 3.1 | 3.5 | 2.4 | 4.5 | 3.7 | 6.4 | 4.2 |
| 2001 | 3.2 | 4.7 | 4.1 | 2.8 | 3.7 | 3.9 | 7.0 | 4.8 | 4.2 | 5.0 |
| 2002 | 4.5 | 4.8 | 3.9 | 3.1 | 4.1 | 5.3 | 5.7 | 5.4 | 6.3 | 5.7 |
| 2003 | 3.3 | 5.7 | 6.4 | 3.3 | 4.7 | 4.1 | 6.7 | 7.1 | 5.4 | 5.8 |
| 2004 | 6.0 | 6.2 | 4.8 | 3.8 | 5.2 | 5.9 | 7.2 | 6.4 | 5.8 | 6.3 |
| 2005 | 4.4 | 5.1 | 4.4 | 2.8 | 4.2 | 5.5 | 8.1 | 6.5 | 5.8 | 6.5 |
| 2006 | 3.6 | 7.9 | 6.8 | 5.6 | 6.0 | 5.2 | 9.0 | 8.3 | 9.0 | 7.9 |
| 2011 | 5.1 | 6.6 | 10.3 | 7.0 | 7.3 | 6.0 | 7.2 | 9.4 | 9.6 | 8.1 |
| 2012 | 5.3 | 8.8 | 10.9 | 7.4 | 8.1 | 6.2 | 8.8 | 9.6 | 10.5 | 8.8 |
| 2013 | 5.7 | 6.3 | 10.3 | 7.7 | 7.5 | 5.9 | 9.9 | 9.4 | 6.7 | 8.0 |

Figure 1 shows that the prevalence of overweight or obesity (in blue) and obesity (in red) increased regularly over time in boys and girls. However, the prevalence of overweight and obesity was not larger in 2013 than in 2012 among girls, and there seems to be a trend for a plateau when comparing prevalence over the past few years. If this is confirmed in 2014 and 2015, this would be good news: the prevalence is clearly much too high but at least it would not be further increasing over time. In contrast, the prevalence seems to be increasing in boys in recent years with no evidence that the increase is slowing over time. The prevalence of overweight, which has been larger in girls than in boys over the past years could therefore be reversing with a higher prevalence of overweight in boys than in girls in the coming few years. A higher prevalence of overweight in girls than in boys is often seen in low income countries while a higher prevalence in males than females is a pattern typically found in western countries, which is consistent with fast health transition in Seychelles.

Figure 1. Prevalence (in percent) of children aged 5 to 16 years with overweight (in blue) or with obesity (in red) according to sex and calendar years between 1998 and 2013. (Screening of approximately 4000-5000 children in C2, P4, S1 and S4 every year, except in 2007-2010; total of 59'314 measurements).



Main messages and recommendations

The prevalence of overweight/obesity is very high in youth in Seychelles. Trends over time suggest a plateau in girls (which may be good news) but a continued sharp increase in boys (which is a bad news). This situation calls for several actions:

- 1) There is a need for continued efforts for health education, particularly in relation to healthy diet, importance of smaller portions, need water over soft drinks, and need for regular physical activity.
- 2) Children found to be obese should be offered adequate school-based weight control programs.
- 3) It is however well known that education programs for weight control have limited efficacy and emphasis should be put on structural interventions in multiple sectors to address the roots of the obesogenic environment (e.g. "health in all policy", "whole of society" approach).
- 4) This includes, *inter alia*, full enforcement of the National School Nutrition Policy, including increased availability of healthy foods, smaller portions and limitation of energy-dense foods in canteens and tuck shops in all schools; availability of water fountains in all schools as a real alternative to soft drinks; regulations to ban the marketing of junk foods in the mass media (e.g. ban on advertisement for junk foods on TV or ban of food placement of junk foods near cashiers in supermarkets); adequate labeling of food packages and foods served in fast food restaurants in relation to food and calories; measures to promote physical activity in/outside schools (e.g. introduction and implementation of 3 hours per week for physical activity in all schools; etc.
- 5) Continued monitoring of the epidemic of overweight/obesity in youth in Seychelles is essential to further guide health policy. Adequate resources are needed to maintain the School Screening Program. In particular, it is particularly important that the school health nurses can dedicate enough time (if possible full time) for effective implementation of all components of the school health program. This includes screening of expected children (crèche, P4, S1 and S4) in all targeted classes but also monitoring the implementation of the school nutrition policy (e.g. the foods supplied in school/tuck shops), health education (including in relation to overweight) and running specific weight control programs (e.g. program on healthy nutrition and physical activity).