



Promoting Physical Activity and Healthy Nutrition in Children and Adolescents: a Report on a Nationally Coordinated Program in Switzerland

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Abstract

Overweight and obesity prevalence rates are high in Switzerland, as in most industrialized countries. Keeping children and adolescents slim must therefore be a public health priority.

In 2007 Health Promotion Switzerland launched a national prevention program targeting children and adolescents as well as parents, teachers and caregivers that focused on promoting physical activity and healthy nutrition behaviors. Over the years, several hundred local and regional projects were implemented in close collaboration with the cantons: hundreds of thousands of children and adolescents were reached as well as tens of thousands of multipliers in several thousand settings (schools, daycare centers, community centers, families, etc.).

The data that were collected over the years showed a slight reduction in the share of overweight and obese children and adolescents and a slight increase in healthy eating behaviors among adolescents. There was no significant change in daily physical activity over the time period studied for any given age, but there was an important drop between childhood and late adolescence.

In conclusion, even though the CAPs design does not allow to conclude that the slight behavioral changes observed are directly linked to the program, it is worth noting, in a health policy perspective, that the program allowed the implementation of a multitude of health promoting activities in good coordination between various stakeholders at local, regional and federal levels.

Keywords: Children, adolescents physical activity, healthy nutrition, health promotion, prevention

1. INTRODUCTION

1.1. Overweight and Obesity in childhood and adolescence

Worldwide, the prevalence of childhood overweight and obesity has increased dramatically over the past decades [1]. Indeed, the increase has been especially significant in young children, as the World Health Organization (WHO) reported: “The number of overweight or obese infants and young children (aged 0 to 5 years) increased from 32 million globally in 1990 to 41 million in 2016” [2]. The increase has been even more notable in older children and adolescents, with the WHO reporting: “The prevalence of overweight and obesity among children and adolescents (aged 5-19) has risen dramatically from 4% in 1975 to just over 18% in 2016. [...] While just under 1%

of children and adolescents were obese in 1975, nearly 7% were obese by 2016” [3].

Early overweight and obesity are major risk factors for a variety of health problems in adulthood, such as type 2 diabetes, cancer, cardiovascular disease, musculoskeletal disorders and disabilities, thus heavily contributing to the global disease burden [4]. Indeed, the maintenance of a healthy body weight from early childhood on represents a major public health challenge [5].

The WHO Global Strategy on Diet, Physical Activity and Health indicates that a “combination of sound and effective actions is needed at global, regional, national and local levels” [6] to improve diets and increase physical activity [6]. When, in 2014, the World Health Assembly adopted the Global Action

Plan 2013–2020 for the prevention and control of non-communicable diseases [7], it de facto further strengthened the objective of halting the global obesity rates in school-aged children, adolescents and adults. During the last decade of the 20th century and the first decade of the 21st century, only a few local or regional studies in Switzerland investigated the body weight of children and adolescents, and they reported a prevalence of overweight and obesity of 15% to 19% [8, 9, 10], a substantial increase when compared to data from half a century ago. Indeed, one particular study [11] reported a five- to six-fold increase when comparing the data of their 2002 study of a representative national sample of 1,196 boys and 1,235 girls aged 6 to 12 years using the IOTF BMI references to data of the first Zurich Longitudinal Study (1960–65) [12] and the second Zurich Longitudinal Study (1980–90) [13]: they observed 16.6% overweight and 3.8% obese boys as well as 19.1% overweight and 3.7% obese girls (mean age 9.8 years). The authors concluded that it is important to fight such an epidemic of overweight and obesity in children and adolescents.

1.2. Health Promotion in Switzerland

In a federal state such as Switzerland—which is composed of 26 cantons fiercely attached to their independence in policy matters—disease prevention and health promotion as well as health care are within the purview of public authorities at three levels: the Confederation, the cantons and the municipalities [14]. In such a complex system, coordination is key for delivering effective and efficient services to the public, a fact stressed by international evaluations [15, 16]. In 1989, the federal authorities, the cantons and the health insurance companies decided to create a foundation—called Health Promotion Switzerland in its current incarnation—intended to initiate and coordinate health promotion activities at the national level [17].

During the period of its strategic plan 2007–2018, the foundation initiated and coordinated many health promotion programs, not ably the one focusing on healthy nutrition and physical activity among children and adolescents presented below [18]. This program was considered a public health priority of national importance, since it is well documented that the longer the period of obesity in early childhood, the greater the probability of adulthood obesity

[19], which in turn increases the risk of developing a chronic non-communicable disease [20]. Similarly, it has been shown that the risk of overweight adolescents to be overweight adults two decades later increases five- to sevenfold [21]. The promotion of physical activity and healthy eating behaviors was chosen because the literature suggests that this is the approach most likely to have the most beneficial health effects in the long run [22, 23, 24, 25, 26].

2. CASE REPORT

We present hereafter part of the Cantonal Action Programs (CAPs), cantonal health promotion activities coordinated by Health Promotion Switzerland, specifically focusing on the health promotion interventions aimed at promoting physical activity and healthy eating behaviors among children and adolescents (further details are available in reference 27).

Indeed, since 2007, the issues of physical activity and healthy nutrition have been a major focus of Health Promotion Switzerland’s strategy, with the aim of increasing the share of the population with a healthy body weight. The CAPs are key to this strategy. With the financial and technical support of Health Promotion Switzerland, the CAPs implement activities at four levels: the *intervention level* covers interventions for specific target groups, e.g., children and adolescents, as well as multipliers; the *policy level* refers to measures, most often structural in nature, designed on a large scale; the *networking level* emphasizes the intra-cantonal and inter-cantonal collaboration between the different actors; and lastly, the *public information level* aims to raise public awareness of the challenges to achieving and maintaining a healthy body weight. Table I summarizes the main objectives of the CAPs, which have been slightly adapted over the years [27].

Table II lists four examples of emblematic interventions aiming at promoting physical activity and healthy nutrition specifically targeting children, adolescents and multipliers that have taken place over the years:

- “Purzelbaum” (somersault), which promotes exercise and healthy nutrition in kindergarten and daycare;
- “Gorilla,” which pursues identical objectives but targets older children and adolescents

through different means (website, workshops, cooking classes, etc.);

- “Pédibus” takes children to school on foot with an accompanying parent; and “Fourchette verte” (green fork) offers healthy meals at school cafeterias

Table III shows the number of individuals reached in the respective target groups, which increased over the years due to the continuous efforts by cantonal and municipal authorities as well as Health Promotion Switzerland, which provided a mean annual budget of roughly 9 million Swiss francs.

Tables IV & V show some results of outcome evaluations that were implemented at regular intervals:

- Archimi et al. [28] report a slight increase in healthy eating behaviors among adolescents;

- Stamm et al. [29] report a slight reduction of the proportion of overweight and obese children and adolescents; they also report a higher share of overweight among children and adolescents of immigrant origin (24% vs. 14%); an even more important difference is observed between children and adolescents of parents with only compulsory education versus parents with higher (tertiary) education (30% vs. 10%);
- Archimi et al. [28] report a slight increase in adolescents mentioning some daily physical activity. Lamprecht et al. [30], using a different data-collecting methodology, do not corroborate this finding, while Bringolf-Isler et al. [31] observe a significant drop in daily physical activity with advancing age: while 100% of 6–7-year-olds report moving one hour per day, only 22% of 14–16-year-olds report the same.

Table I. Main objectives of the Cantonal Action Programs (CAPs) at the different activity levels over the years

Level	Main objectives
Intervention	Interventions are increasingly and permanently anchored in existing or new structures
	Interventions are evaluated on a regular basis and focus on the target groups (children, adolescents and multipliers)
Policy	Promotion of physical activity and healthy nutrition is increasingly structurally anchored in the cantons
	Policymakers are committed to promoting physical activity and healthy eating habits
Networking	In a majority of the cantons a close collaboration with the respective education department has been established (to provide access to schools)
	Active networking within cantons and among cantons has been implemented
Communication	Newly introduced topics have been integrated into the CAPs and communicated to the public (e.g., impact of soft drinks on body weight)
Outcome	The number of persons reached in the various target groups has increased
	The healthy behaviors of children and adolescents regarding nutrition and physical activity have improved
	The share of overweight or obese children remains stable or has even decreased

Table II. Examples of interventions aiming at promoting physical activity and health nutrition among children and adolescents

Project Name	Project objectives	Outreach	Outcome multipliers	Outcome children & adolescents
Purzelbaum (somersault)	“Purzelbaum” anchors versatile exercises, balanced nutrition and resource-strengthening offerings in the everyday life of primary schools and kindergartens as well as daycare centers and play groups through simple and practical means.	59,000 children 3,900 teachers 3,067 kindergartens/schools/day-care centers	90% consciously use exercise as a pedagogical tool 71% address the topic of exercise at parent-teacher conferences 55% of teachers	97% of children are braver when it comes to physical activities 97% move more 82% have more fun exercising

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			organize a parent-child exercise activity every year	58% eat a balanced snack
Gorilla	Through workshops, a website, a cookbook and educational videos, the project promotes healthy eating behaviors as well as exercise and sports	24,025 children/adolescents 527 teachers		82% intend to move more, 54% intend to try new recipes, 40 eat more fruit, 25% consume fewer sweets, 10% start a new sport
Pédibus	The “Pédibus” takes a group of children on foot to school or kindergarten and picks them up again, accompanied by an adult.	3,000 children use the Pédibus on a daily basis 1,600 adults escort the children 1,500 “Pédibus Lines” have been founded	46% of families develop more sustainable mobility behavior thanks to Pédibus 96% of parents are satisfied with Pédibus 70% of parents are convinced that Pédibus increases safety on the way to school	
Label Fourchette verte (green fork)	“Fourchette verte” is a quality and health label for restaurants and cafeterias that offer balanced meals based on the Swiss food pyramid. The label Fourchetteverte exists for toddlers (1 to 4 years old) in daycare centers & children’s living spaces. The label also exists for older children (Fourchette verte Junior for ages 4 to 20 years) in school cafeterias and student accommodations.	In 2018 499 institutions were labeled “Fourchetteverte des tout petits,” corresponding to 19,376 seats available 719 institutions were labeled “Fourchetteverte Junior,” corresponding to 50,572 seats available		

Table III. Number of children/adolescents/multipliers reached in various settings over the years

Year	2011	2013	2017
Children/adolescents	132,792	177,902	526,027
Multipliers	2,200	2,121	32,821
Settings	6,840	10,502	34,347

Table IV. Outcome evaluations: changes in eating behaviors and physical activity of adolescents

Publication	Number of participants Year of Study	Age	Share of participants with 1 hour of daily physical	Share with healthy eating behaviors

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			activity	
Archimi et al., 2016	5,837 2010	11–15 years	12%	42%: daily consumption of vegetables 43%: daily consumption of fruit 41%: consumption of soft drinks maximum once a week 95%: consumption of hamburger/hot dog maximum once a week
Archimi et al., 2016	9,894 2014	11–15 years	14%	45%: daily consumption of vegetables 47%: daily consumption of fruit 39%: consumption of soft drinks maximum once a week 95%: consumption of hamburger/hot dog maximum once a week

Table V. Outcome evaluations: changes in overweight/obesity among children and adolescents

Publication	N Number of individuals	Age	Year of study	% overweight (including obese)	% obese
Stamm et al., 2017	23,694	5–7 years	2010	15.8	4.1
			2013	12.6	3.0
			2017	11.1	2.7
		9–11 years	2010	19.1	3.2
			2013	18.2	3.9
			2017	16.5	3.0
		14–15 years	2010	20.5	4.7
			2013	20.5	4.9
			2017	21.5	4.8

3. DISCUSSION

As shown in the outcome evaluations of the cantonal action programs that were developed and implemented over the last decade across Switzerland, there seems to be a trend towards stabilization or even decline in overweight/obesity prevalence among children and adolescents over the past decade, yet the overall prevalence rates remain high. From a public health perspective, these are encouraging developments, “*even though the underlying causes of the change are not yet clear*” as Jeannot et al. suggest; “*the hypotheses range from the effect of prevention and public awareness to a change in body image*” [32]. Similar trends have been reported from several European countries, albeit with important between-country differences [33, 34]. For example, our data differ from recent results reported by U.S. researchers, who mention “*a continued upward trend with significant increases in obesity and severe obesity in children aged 2 to 5 years and adolescent females aged 16 to 19 years from 2015 to 2016*” in their nationally representative U.S. sample [35]. Socioeconomic differences persist in the prevalence of overweight and obesity among children and adolescents, as data reported by Stamm et al. [29] show. Similar data has been

reported by several authors from different countries [36, 37]. This is a factor that has to be taken into consideration if effectiveness and efficiency are to be improved in overweight/obesity prevention strategies.

On the other hand, we have observed a slight improvement in eating habits, especially with regard to adolescents, who over the years seem to eat more fruits and vegetables on a regular basis. Our observations are in line with the conclusion of a systematic review of multi-component interventions that promoted a healthy diet in school-aged children in European Union countries, i.e., that such interventions may have “*a positive impact on self-reported dietary behavior*” [38].

Data regarding the increase in physical activity related to the CAPs interventions were less conclusive, based on the outcome measures. Yet qualitative data from various projects, such as the aforementioned “Pédibus” and “Purzelbaum” projects (Table II), suggest increased daily physical activity in all participating groups. This is all the more important since it is well documented that regular physical activity provides significant health benefits for young people, be it in terms of cardiovascular fitness, overweight/obesity

prevention, bone and muscular strength as well as improved overall well-being [39, 40].

4. CONCLUSION

Though the CAPs design does not allow concluding that the behavioral changes observed, however modest they may be, are directly linked to the program, it is worth noting, in a health policy perspective, that it allowed the implementation of a multitude of health promoting activities in good coordination between various stakeholders at local, regional and federal levels. One might also argue that structural approaches “*such as limiting of access to certain foods and generating a health-promoting environment*” [32] are essential and might represent a more effective approach on the long run.

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