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The health of Barcelona's children and adolescents

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Most children and adolescents claim they are in good health. But when this is studied using the main inequality axes, differences are observed by both gender and the socio-economic level of the neighbourhood they live in. Monitoring both their lifestyles and the information arising from determining social-health factors provides an opportunity for starting to promote health from the first phases of schooling. Barcelona has a long tradition of health promotion interventions at these stages of life.

Introduction

Most of people's health development is completed during childhood and adolescence and their main lifestyle behaviour patterns relating to health are also established. When considering health throughout childhood and adolescence, it is important to include the perspective of health determinants factors, which also include determining social factors and their influence throughout people's lifetimes. For these future adults, living conditions during childhood and their physical, cognitive, emotional and social development are determining factors in academic performance and health, as well as social and employment participation. For this reason, the appearance of possible inequalities during these stages has a differential impact on aspects such as the growth and development experienced by these minors, and in their family and school environments (Cohen, 2010; Rajmil, 2010).

All of this is developed in the following text, which has been divided into three parts. The first part, using indicators compiled by the 0-17 Observatory, which was recently created by the Institute of Childhood and Adolescence, includes the most significant results that it is possible to describe in their development by age, and make it possible to show the unequal distribution of health according to age. The second part describes health inequalities in the adolescent population, which exist in a person's perception of their own health and some of their lifestyle behaviour patterns, as well as the appearance of the first risk factors that may condition people's health at this stage in life and also as adults. The 0-17 Observatory uses three main sources for the data presented in these first two sections:

1) The Subjective Well-Being Survey for Children in Barcelona (EBSIB) 2017, from the Institute of Childhood and Adolescence. Approximately 4,000 city children between the ages of 10 to 12 took part in the EBSIB. This is a representative sample for all city districts, in

which 52 schools were involved. The Subjective Well-Being Survey allows us to learn how children feel at home, among their families, with friends and at school.

2) The Barcelona Health Survey (ESB) 2016, from the Barcelona Public Health Agency (ASPB) (Bartoll *et al*., 2018). The ESB compiles information on the population's health, health-related habits, the use of health services and preventative practices, as well as on health determinants factors, in both physical and social contexts, taken from 4,000 interviews with people who live in the city.

3) The Survey on Risk Factors for Secondary-School Students (FRESC) 2016, from the Barcelona Public Health Agency (Santamariña-Rubio *et al*., 2017). 3,888 secondary-school pupils from the City of Barcelona, aged from 13 to 18, were involved in the FRESC survey. It is administered every four years to 2nd year (13-14) and 4th year (15-16) students in the Secondary school, as well as 2nd year of High school and intermediate vocational training (CFGM) students (17-19). This provides information about the health-related behaviour and habits of adolescents.

The third section of this article presents the main interventions undertaken by the Barcelona Public Health Agency over the last twenty years, in reference to much of the above-mentioned health data and risk factors. These are interventions that promote health among schoolchildren, implemented by teaching staff in the classroom, and often accompanied by small complementary components carried out with their families.

As a whole, these three sections enable us to reflect on the health situation of the city's children and adolescents and the main interventions which are offered to that population in a systematic, controlled way, in the area of public health.

1. The most recent results for children and adolescents concerning health-related behaviour

Information is compiled from surveys carried out in 2016 and 2017, which allows us to describe the health of Barcelona's children and adolescents. Data has been selected that refers to the perception of health in general and some specific areas, such as activity and rest, weight and body image, mental health and some behaviour patterns related to sexual and reproductive health and the consumption of addictive substances.

85.3% of the children in the survey aged between 10 and 12 stated that they perceived their health as being excellent or very good. For adolescents aged between 13 and 18, this figure decreases to 62.6%. Regarding rest, a high proportion of children and adolescents do not sleep the recommended sufficient number of hours a day (43.0% of children and 70.0% of adolescents). This figure is higher for boys, especially in the case of adolescent boys (73.8%). In physical activity, over 30% of girls (children and teenagers) do an insufficient amount of physical activity outside school hours (38.2% and 30.7%, respectively). Regarding weight, compiled in accordance with the body mass index, it is observed that boys (children and teenagers) have the highest levels of obesity, especially in children under the age of 13, with a 14.8% obesity rate. By contrast, the girls show greater dissatisfaction with their bodies; 28.3% of girls under the age of 13 and 52% of teenage girls between the ages of 13 and 18. In terms of the risk assessment for suffering some kind of mental-health problem, a high or intermediate risk of 31.3% is observed for teenage girls compared to 23.3% for teenage boys (see table 1).

Table 1 also shows the indicators referring to sexual health and the consumption of tobacco and alcohol, focusing on adolescents. 85.5% of adolescents use an effective contraceptive

method, such as condoms, contraceptive pills or vaginal rings. Regarding the consumption of tobacco, we can say that there is a high percentage of young people who do not smoke, or say they have tried it occasionally (>80%). Lastly, over 70% state that they have tried alcohol at some time, with girls showing a higher percentage than boys (73.2% for girls compared to 69.0% for boys).

Table 1. Health indicators listed in surveys* applied to Barcelona children and adolescents. 2016 -2017

Indicators	% Children (< 13 years old) Boys	Girls	Total	% Teenagers (13-19 years old) Boys	Girls	Total
Self-perceived health						
Excellent or very good	85.0	85.4	85.3	70.2	54.5	62.6
Good	11.0	10.9	11.0	23.0	34.6	28.7
Average or bad	4.0	3.7	3.8	6.5	10.9	8.6
Hours of sleep[1]						
Sufficient hours of sleep	56.2	58.0	57.0	26.2	33.9	30.0
Insufficient hours of sleep	43.8	42.0	43.0	73.8	66.1	70.0
Physical activity (out-school hours)						
Physical activity-yes (daily or often)	74.5	61.8	68.3	79.5	66.3	72.9
Physical activity - no (insufficient)	25.5	38.2	31.7	16.3	30.7	23.5
Body mass index[2]						
Normal weight	61.8	64.5	63.3	71.6	78.1	74.7
Overweight	23.4	24.7	24.0	20.2	16.4	18.4
Obese	14.8	10.8	12.7	8.2	5.5	6.9
Satisfaction with body						
Satisfied	74.9	71.8	72.9	63.4	46.8	55.9
Not satisfied	25.1	28.3	27.1	36.3	52.0	44.1
Mental health[3]						
Low or zero risk of suffering a mental-health problem	93.0	95.5	94.2	76.4	68.5	72.6
High or medium risk of suffering a mental-health problem	7.1	4.5	5.9	23.3	31.3	27.2
Sexual health						
Using effective contraceptive methods (condoms. pill. vaginal ring)	-	-	-	87.4	83.6	85.5
Not using contraceptive methods or using non-effective ones (pulling out. calculating dates)	-	-	-	11.7	15.6	13.6
Tobacco consumption						
Not consuming or experimental consumption of tobacco	-	-	-	85.4	85.2	85.3
Daily or weekly tobacco consumption	-	-	-	12.8	14.1	13.5
Alcohol consumption						
Not consuming alcohol	-	-	-	29.3	26.1	27.7
Having consumed alcohol at some point in life	-	-	-	69.0	73.2	71.1

*Sources: The Subjective Well-Being Survey for Children in Barcelona (EBSIB). 2017. Institute of Childhood and Adolescence / The Barcelona Health Survey (ESB). 2016. Barcelona Public Health Agency / Survey on Risk Factors for Secondary-School Students (FRESC). 2016. Barcelona Public Health Agency.

1. The recommended number of hours of sleep for children is 10 or more. and the recommended number for adolescents is 9 or more.

2. The data referring to children has been extracted from the POIBA project. Barcelona 2012.

3. The data referring to children has been extracted from the 2016 ESB. from the ages of 4 to 14. The risk of suffering a mental-health problem is assessed using the Strengths and Difficulties Questionnaire (SDQ) scale.

2. Health inequalities in Barcelona's adolescent population

As previously mentioned, the FRESC survey, carried out by the Barcelona Public Health Agency since 1987, provides health information about health and its determinant factors among adolescent students in the City of Barcelona. The results of its last edition (2016) reveal the existence of major inequalities by gender and socio-economic level, and in general, girls in disadvantaged neighbourhoods continue to be the group with the worst indicators. The most relevant results are described below and can be consulted in Table 2.

Table 2. Main inequalities according to gender and socio-economic level (SEL) of adolescents. Barcelona, 2016

Gender	SEL level of neighbourhood where school is located
The girls state:	*In schools in SEL disadvantaged neighbourhoods:*
Worse perceived health and mental health	Worse perceived health and mental health
Greater discrimination and mistreatment	More overweight and obese students with obesity
More sexual harassment	Greater personal dissatisfaction
Greater body dissatisfaction	More food insecurity
More sedentarism	More sedentarism
Fewer hours of sleep	More accidents involving bicycle collisions or being run over
Greater problematic use of mobile phones	
The boys state:	*In schools in wealthier SEL neighbourhoods:*
More obesity	More tobacco consumption
Greater problematic use of the internet	More alcohol consumption
More cannabis consumption	More cannabis consumption
Greater frequency of injuries	More traffic accidents involving motorbikes

In general, adolescent students in Barcelona presented good health in 2016. However, 6.5% of the boys and 10.9% of the girls have a bad perceived state of health (average or bad), and these percentages increase with age, especially among girls. Furthermore, a greater number of girls than boys in disadvantaged neighbourhoods schools perceive their health as average or bad (boys, 6.3% in wealthier neighbourhoods and 6.7% in disadvantaged ones; girls 8.1 and 14% respectively). There is a similar pattern for mental health. Girls show a higher probability of suffering from a mental-health problem than boys (10.4% for girls and 7.4% for boys), and this probability is greater in educational centres located in disadvantaged neighbourhoods, for both sexes.

Inequalities between boys and girls are also observed in the relationships they establish. In this sense, girls state that they have suffered more situations of discrimination than boys (30.7% for girls, and 21.7% for boys), and the most frequent reasons are discrimination about their country of origin or their ethnicity, for both sexes, while the girls also suffer gender discrimination. Furthermore, the girls suffer more mistreatment in the school environment than boys (5.4% for girls, 3.8% for boys), while the percentage of aggressors is higher in boys (7.8% for boys, 4.0% for girls). The survey also reveals that sexual harassment is much higher among girls. In 2016, 17% of the girls surveyed stated that they had suffered sexual harassment at some time, compared to 3.8% for boys. The percentage of sexual-harassment victims, especially among girls, increases with age, reaching 26.4% by the 2nd year of High school or vocational training, and it is higher in schools in disadvantaged neighbourhoods.

In 2016, among 2nd year secondary-school students, 23% of boys and 20.2% of girls were overweight, while 10.1% of boys and 6.4% of girls were obese. These percentages were higher for both sexes in schools in socio-economically disadvantaged neighbourhoods. Even so, girls show greater dissatisfaction with their body image (52% for girls, 36.3% for boys). Similarly, it is observed that a greater number of students attending centers in socio-economically disadvantaged neighbourhoods show food insecurity (2.9% for boys, 1.7% for girls).

Insufficient physical activity or sedentarism is more frequent in girls (16.7%) than in boys (8.4%) for all age groups. However, the percentages are higher in schools located in disadvantaged neighbourhoods, for both boys and girls. Regarding hours of sleep, more girls state that they sleep fewer hours than the recommended number (less than 8 hours) than

boys (60.2% of girls, 56.7% of boys). These percentages increase with age and among students from neighbourhoods with the worst socio-economic levels.

Regarding to mobile phones, 4.1% of boys and 4.5% of girls state that they have frequent problems relating to their use and these percentages increase with age. Similarly, 7% of boys and 5% of girls state that they have a frequent problem regarding the use of internet, and these percentages are higher among students from disadvantaged neighbourhoods.

In terms of addictive substances consumption (tobacco, cannabis, alcohol), it should be noted that there is a downward trend in the consumption of tobacco for both sexes, but more noticeably among girls, so that the difference between the sexes has been reduced. However, girls show a higher regular, daily consumption of tobacco in educational centres in wealthier neighbourhoods. Regarding alcohol, consumption is higher among girls than boys, except in 2nd year secondary-school students, and this increases with age (for boys: 43.8% in 2nd year, 70.6% in 4th year and 87.8% in 2th year of High school and vocational training; for girls: 41.8%, 79.8% and 92.6%, respectively). At schools in wealthier neighbourhoods, there are more students who have got drunk at some time in the last 6 months, but there is a downward trend, especially among girls. The intensive consumption of alcohol (binge drinking) is also frequent among boys in schools in wealthier neighbourhoods. Regarding to cannabis, more boys than girls state that they have tried it at some time, and this percentage increases with age (for boys: 8% at 2nd year, 32.2% at 4th year and 56.8% at 2n year of High school and vocational training; for girls: 6.1%, 28.8% and 52.9%, respectively). Consumption of cannabis, of moderate or high risk, is higher for girls in socio-economically wealthier neighbourhoods.

Regarding sexual health, 25.1% of boys and 22.7% of girls in 4th year of secondary school have had a sexual relationship with penetration, a proportion that increases sharply in 2nd year of High school and CFGM vocational training (53.7% for boys, 52.8% for girls) especially among pupils, of both sexes, in disadvantaged neighbourhoods. Furthermore, among these students, and especially among the boys, there is also a more frequent use of non-effective contraceptive methods or even no method at all. By contrast, girls show a greater use of the day-after pill and this proportion increases with age.

Lastly, active transport (walking or cycling) is less common in socio-economically wealthier neighbourhoods, where public transport and private motorised transport are used more often. In general, girls show a greater awareness of road safety and use seat belts in cars and crash helmets on motorcycles more often. For both sexes, traffic accidents concerning bicycle collisions or being run over are more common among students from disadvantaged neighbourhoods, while in wealthier neighbourhoods, more students are in traffic accidents involving motorbikes.

In the light of this data, we should remember the importance of prevention, in order to provide adolescents with the tools they need to deal with risks to their health. In this sense, the Barcelona Public Health Agency undertakes various programmes in city schools which focus on various health needs, such as eating habits, consumption of drugs and peer pressure or sexual health, among others.

3. Main health promotion interventions among children and adolescents

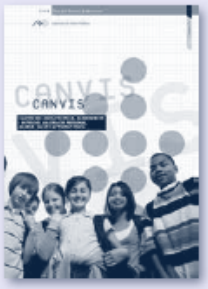
Over the last twenty years, the Barcelona Public Health Agency (ASPB) has undertaken a series of interventions to promote health among the city's children and adolescents. As can be seen in the forthcoming description of the current catalogue offered to schools, these usually consist of 5 to 10-session modules that are usually offered to class groups and are

given by teaching staff, with advice from ASPB health staff. In most cases, this consists of previously-evaluated interventions where their expected effectiveness in preventing unhealthy lifestyles or the problems they aim to prevent have also been established.

In the list below, there are six programmes that correspond to three basic themes relating to the promotion of health (see Diagram 1):

Diagram 1. Main interventions for the promotion of health at the school base of the Public Health Agency of Barcelona, 2018

Programmes offered, by school year and objective

Primary school		Secondary school			
4th	6th	1st	2nd	3rd	From 3rd onwards
"Creixem sans"	"Creixem més sans"	"PASE.bcn"	"Canvis"	"Sobre canyes i petes!"	"Parlem-ne; no et tallis!"
					
Healty eating and physical activity		Preventions of tobacco consumption	Changes in adolescence, nutrition, personal evaluation, image and physical activity	Prevention of alcohol and cannabis consumption	Sexual-relationship education

1. Healthy eating and physical activity, important for avoiding one of the emerging risk factors: obesity. This includes the first two programmes that are worked on in Primary school "Growing up healthy" and "Growing up healthier", and the 2nd-year secondary-school programme called "Changes".

2. The universal prevention of drug addiction, focused on preventing tobacco and alcohol consumption through the "PASE.bcn" programme, as well as alcohol and cannabis consumption in the "About beer and joints" programme.

3. The promotion of healthy and responsible sexuality through the programme "Speak about it, don't be shy!" given from 3rd-year secondary school onwards.

Here is a brief, but more detailed, description of all six interventions in the Diagram 1.

"Growing up healthy"

Obesity-prevention programme, promoting healthy eating and physical activity, as well as balancing the use of screens and resting. For 4th-year primary-school pupils (9-10). 9 classroom sessions of approximately one hour. With a complementary family workshop.

"Growing up healthier"

Reinforcement intervention to provide continuity to the "Growing up healthy" programme on obesity-prevention, promoting healthy eating and physical activity, as well as balancing the

use of screens and resting. For 6th year primary-school pupils (11-12). 3 classroom sessions of approximately one hour. With a complementary family workshop.

"PASE.bcn"
Addiction-prevention programme, focusing especially on prevention of the consumption of tobacco and alcohol. For 1st-year secondary-school pupils (12-13). Minimum intervention: 6 sessions of approximately one hour. Recommended intervention: 9 sessions of approximately one hour.

"Changes"
Programme working on changes during adolescence, personal evaluation, healthy eating, physical activity, rest, screens and social media. For 2nd-year secondary-school pupils (13-14). Minimum intervention: 4 sessions of approximately one hour. Recommended intervention: 8 sessions of approximately one hour.

"About beer and joints!"
Addiction-prevention programme, focusing specifically on the consumption of alcohol and cannabis. For 3rd-year secondary-school pupils (14-15). Minimum intervention: 6 sessions of approximately one hour. Recommended intervention: 11 sessions of approximately one hour.

"Speak about it, don't be shy!"
Sexual-health programme, preventing teenage pregnancies and sexually transmitted diseases. One of two itineraries can be chosen according to the characteristics of the students and education centre, as well as teaching-staff preferences. Indicated for 3rd-year secondary-school to 2nd year High-school students and vocational training students. Itinerary 1 consists of six sessions lasting approximately one hour. Itinerary 2 consists of four sessions lasting approximately one hour. Two are given by teaching staff in the classroom and two by two students. Both itineraries include a visit to a sexual and reproductive healthcare centre.

4. Conclusions and future perspectives

The results presented in the first two sections indicate that children and teenagers show good physical and mental health, healthy behaviour and positive experiences in their relations with their various environments.

However, there are also significant social inequalities in terms of health, especially by age, gender and socio-economic level, as the main factors of inequality. Perceived health and satisfaction with life decrease with age and are weaker among girls and young people pertaining to disadvantaged socio-economic status (SES). In some cases, a notable proportion of young people and teenagers initiate some behaviour patterns that compromise their health, such as consuming tobacco or alcohol, as well as some risky behaviour relating to sexuality. The prevalence of these problems increase with age and also in young people from disadvantaged SES neighbourhoods, and in terms of intensity, they are more common among boys. By contrast, the complaints most related to subjective health and sexual discrimination are much more common among girls.

These inequalities, which appear with much greater intensity in the most recent surveys, confront us with the need to design new interventions that try to prevent these inequalities extending into adult life, with negative consequences for their lives and their social development. Specifically, in recent years, we have started to work on matters relating to basic three themes:

- Bullying, the various types of discrimination and sexual harassment.

- The use of technological devices and especially people's relationship with mobile phones and internet access, which introduce new relational problems linked to social addictions, currently being studied to establish their scale and characteristics.

- Gender violence and its first manifestations in teenage relationships, but also including precedents that date back to the assignment of roles in childhood.

For all of these problems, the Public Health Agency of Barcelona, together with the Education Consortium (CEB), other social organisations and the Administration, are working on intervention responses that are currently being designed and evaluated, and which will be available in coming years.

But furthermore, promoting health has to be sensitive to the above-mentioned differences according to age, gender and SES, which means it is advisable to revise the gender perspective and intersectionality of all of these interventions. In recent years, the Public Health Agency has been making a specific effort in this sense, both in terms of observing this in the design of new interventions and in a thorough revision of older interventions.

In relation to the presented lines of action, from the 2019-2020 school year onwards, the prevention of childhood obesity will include two new programmes aimed at children's preschool education and first year primary-school pupils; a line of emotional education will be initiated from preschool education, and a selective prevention programme on alcohol and cannabis consumption will be offered. Unlike those which have already been presented, this programme is for young people who already show risky consumption behaviour or who are in environments that expose them to that behaviour.

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