COHORT PROFILE

Cohort profile of the Young-HUNT Study, Norway: A population-based study of adolescents

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Accepted 4 December 2012

The Young-HUNT Study is the adolescent part (13–19 years) of HUNT, the Nord-Trøndelag Health Study, Norway. Three cross-sectional surveys have been conducted: Young-HUNT1 (1995–97), Young-HUNT2 (2000–01) and Young-HUNT3 (2006–08). Major public health issues, including somatic and mental health, quality of life and health behaviours are covered. Young-HUNT was performed in schools visited by trained nurses. Data collection included self-reported questionnaires, structured interviews, clinical measurements and, in Young-HUNT3, buccal smears. The total response rates varied from 90% to 83% and the Young-HUNT database includes 17,820 teenagers.

Some Young-HUNT1 participants constitute the baseline for two follow-up studies: a 4-year follow-up through adolescence to Young-HUNT2 and an 11-year follow-up into young adulthood to the adult HUNT3. Longitudinal data are also obtained by linkage of data from Young-HUNT to different national health registers. Linkage to family registers allows the possibility of studying genetic and environmental interactions through generations. Presently 20 PhD students are working with the data, 11 Young-HUNT based PhD theses have been completed and more than 50 scientific papers published.

Why was the cohort set up?

The Young-HUNT Study is the adolescent part of the Nord-Trøndelag Health Study (the HUNT Study), a large population-based health study in the county of Nord-Trøndelag, Norway (http://www.ntnu.edu/hunt). The HUNT Study includes three large surveys conducted in 1984–86, 1995–97 and 2006–08.1–3 Adolescence is a time of biological, mental and social challenges and an important period when lifestyle behaviours with impact on future health are established. The aims of the HUNT Study were to cover major public health issues, including diseases and health behaviours. When planning HUNT2, it was concluded that it would be desirable to track this over time also in adolescence, and additionally, to track this prospectively through adolescence into adulthood. It was then decided to include
adolescents aged 13–19 years in HUNT starting from HUNT2, 1995–97, forming the Young-HUNT1 survey. The Young-HUNT2 survey was a 4-year follow-up of Young-HUNT1, and a new total cohort, the Young-HUNT3 survey, was included in HUNT3.

The Young-HUNT Study was designed to cover a broad range of topics in relation to major public issues. The main focus of somatic health problems has been respiratory and allergic diseases, subjective health problems, different types of headaches and eating problems including overweight and obesity. Mental health included anxiety and depression, self-esteem, personality and well-being. Health behaviours focused on alcohol use, tobacco use, diet, regularity of meals, dieting and physical activity. Puberty, school problems and leisure time activity were also included. Young-HUNT3 was even more extensive, adding a broader focus on pain, acne, social anxiety, school and leisure time activities and unfortunate incidents.

The HUNT Study, including Young-HUNT, is administered by HUNT Research Centre, Nord-Trøndelag, Norway, originally part of the Norwegian Institute of Public Health, but from 2001, part of the Department of Public Health and General Practice, Faculty of Medicine, the Norwegian University of Science and Technology (NTNU), Norway.

Who is in the cohort?
The Nord-Trøndelag county is situated in the middle of Norway and has a rather constant population size of about 130 000 inhabitants. The county is mostly rural, with a lack of large cities, but is fairly representative of Norway as a whole regarding geography, economy, industry, and sources of income, age distribution, morbidity and mortality.

Invitation procedures
Schools have been the main study sites in all three Young-HUNT surveys. In Norway all adolescents are expected to attend junior high schools (age 13–16 years) or high schools (16–19 years). The principals of all the 66 schools in the county gave their written consent to their school’s participation. The lists of students in each class were the basis for the invitations. Together with the invitation letter followed thorough information about the study and use of data, to all participants and their parents or guardians. A questionnaire was completed by students during a school hour in an exam-like situation. The questionnaire was marked with barcodes without names and was sealed in a blank envelope by the students themselves. Within a month, specially trained nurses visited all the schools for interviews and measurements. Students absent on the day of the questionnaire were encouraged to complete this when the nurses visited the schools.

Adolescents not in school according to the records of the county school authorities were invited to the study by post. The questionnaire was included with a letter of invitation to attend the clinical part of the study at one of the study sites for the adult part of HUNT2 and 3. As no adult study was going on during Young-HUNT2, participants not in school were offered only the questionnaire.

Ethics
All participants and the parents or guardians of those under the age of 16 years gave a written consent to participation and use of data for research. Young-HUNT is approved by the Norwegian Data Inspectorate, the Regional and National Committees for Medical and Health Research Ethics and the Norwegian Directorate of Health. Voluntary participation was highlighted.

Attendance
In the Young-HUNT1 survey (1995–97) a total of 9141 adolescents participated (response rate 89.6%), 88% completed the questionnaire and 83% completed both the questionnaire and the clinical examination. Students in Junior High school had the highest participation rate (95%) while only 20 (7%) of the adolescents not attending school participated (Table 1). For the Young-HUNT2 survey (2000–01), students in the last two years of high school or in corresponding vocational training (age 16/17–19 years) were invited. The number eligible for invitation was 3166 students, 76% of those in the age group 13–16 years who had previously participated in Young-HUNT1. Those who were not invited were either attending the first year of high school, had changed school courses, attended schools in other communities, had ended school or moved out of the county. Students in vocational training and some students in third grade just about to leave school (n = 782) only received the questionnaire. In total 2399 students (77%) completed the questionnaires at both surveys and 1661 of the invited (60%) completed both the questionnaires and the clinical examination.

The Young-HUNT3 survey (2006–08) included a new cohort of adolescents aged 13–19 years in the county. Altogether, 677 people (83% response rate) participated in at least one of the study parts, 78% completed the questionnaire and 7716 (74%) completed both the questionnaire and measurements. The highest participation rate was again in junior high schools (85%), and the lowest in people not attending schools, at 23% (n = 115).

Non-responders
The Young-HUNT Study has a high attendance rate among adolescents attending school. Of non-participants, most were not in school when the study was conducted. It cannot be excluded that these students to a larger extent may have had somatic or mental health problems. In the Young-HUNT2
and Young-HUNT3 surveys, the organisation of classes was changed compared with the Young-HUNT1 survey as the students were more scattered in various classes and were more often attending class activities outside school, thus more students missed attending the study. There is no reason to believe that this introduced a systematic selection bias.

From the invitation lists it is noted that non-responders compared with responders were older, more often boys and more often attended vocational than academic classes. An increasing tendency to school drop-out among 17–19 years old from Young-HUNT1 to Young-HUNT3 was seen, and more students below the age of 16 in Young-HUNT3 failed to return a written consent from their parents or guardians and were therefore not included. This may indicate some degree of socioeconomic difference.

It might be expected that non-responders not in schools have a less favourable lifestyle and worse health. The attendance rate for adolescents not in school was so low that Young-HUNT data are not representative for this group.

How often have they been followed up?

At present two follow-up studies are included within the Young-HUNT Study, and in addition data from Young-HUNT have been linked to different national registers (Figure 1). A HUNT4 is planned giving a 22-year follow-up of Young-HUNT1 and an 11-year follow-up of Young-HUNT3.

The Young-HUNT1 to Young-HUNT2 cohort, a 4-year follow-up, included a 2399 participants followed from early adolescence (mean age 13.9 years) to late adolescence. Additional clinical data were available for 1681 students. In both waves the same procedures for data collection were followed, including the same self-reported questionnaire, interviews and measurements, except blood pressure which was not measured in the Young-HUNT2 survey.

Only 76% of the participants in the relevant age groups in Young-HUNT1 were invited; 77% of these participated. Those who were invited to the follow-up did not differ significantly from rest of the Young-HUNT1 population. A small social gradient at baseline can be expected between participants and non-participants at follow-up, as participants tended to be less daily smokers, more often physical active, had lower BMI, more often perceived their health as very good and less often had parents that smoked compared with non-participants. However, non-participants were also slightly older than participants which may account for some of these differences (Table 2).

The Young-HUNT1 to HUNT3 cohort was an 11-year follow-up from adolescence (mean age 15.9 years) to young adulthood. In total 1919 participants in the Young-HUNT1 survey also participated in the adult HUNT3 survey, and 1906 people completed both questionnaires and measurements in both studies. Non-responders in HUNT3 received a short version

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**Table 1 Attendance rate in the Young-HUNT Study, including Young-HUNT1 (1995–97), Young-HUNT2 (2000–01) and Young-HUNT3 (2006–08)**

<table>
<thead>
<tr>
<th>Surveys</th>
<th>Number invited</th>
<th>Response rate questionnaire</th>
<th>Response rate clinical data</th>
<th>Response rate both questionnaire and clinical data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Young-HUNT1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high</td>
<td>5004</td>
<td>4742</td>
<td>4596</td>
<td>4596</td>
</tr>
<tr>
<td>High school</td>
<td>4913</td>
<td>4221</td>
<td>3819</td>
<td>3819</td>
</tr>
<tr>
<td>Not in school</td>
<td>285</td>
<td>20</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>10 202</td>
<td>8983</td>
<td>8575</td>
<td>8433</td>
</tr>
<tr>
<td>Young-HUNT2a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High schoolb</td>
<td>2739</td>
<td>2271</td>
<td>1691</td>
<td>1661</td>
</tr>
<tr>
<td>Voc. trainingb</td>
<td>385</td>
<td>128</td>
<td>97</td>
<td>84</td>
</tr>
<tr>
<td>Total</td>
<td>3124</td>
<td>2399</td>
<td>1691</td>
<td>1661</td>
</tr>
<tr>
<td>Young-HUNT3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high</td>
<td>5614</td>
<td>4749</td>
<td>4801</td>
<td>4615</td>
</tr>
<tr>
<td>High school</td>
<td>4357</td>
<td>3336</td>
<td>3294</td>
<td>3017</td>
</tr>
<tr>
<td>Not in school</td>
<td>493</td>
<td>115</td>
<td>97</td>
<td>84</td>
</tr>
<tr>
<td>Total</td>
<td>10 464</td>
<td>8200</td>
<td>8192</td>
<td>7716</td>
</tr>
</tbody>
</table>

*aParticipants in Young-HUNT2 who also completed the questionnaire in Young-HUNT1.

*bSome students in third grade of high school and everyone in vocational training were not invited to the clinical part of the study (n = 782).
of the questionnaire by mail including core questions on somatic and mental health and lifestyle. An additional 1440 young adults who also participated in Young-HUNT1 responded, yielding a total follow-up of 3359 people with questionnaire data.

Although the participation rate in Young-HUNT1 was high, the participation rate in HUNT3 in the age group 20–29 yrs was low (31.5%). Many people in this age group had moved out of the county for further education and were not eligible for invitation to the HUNT3 survey. Of the invited (5353 people), 42% of the women and 30% of the men participated. The same differences at baseline between participants and non-participants as in the Young-HUNT1 to Young-HUNT2 study were also seen for this cohort (Table 3) in the Young-HUNT1 to Young-HUNT2 to HUNT3 cohort, 574 people participated with data in all three surveys.

### Linkage of data

All HUNT data are linked to the unique personal identification number assigned to every Norwegian citizen at birth. This makes it possible to link data between the HUNT surveys and study parts for each person in Young-HUNT and also to link HUNT data to regional and national health registers with very few data missing (Figure 1).

Data have been linked to the Norwegian Birth Register and to the Norwegian Family Register. This yields the possibility of studying effects of factors at birth in a life-course perspective and gives the unique possibility of studying parental effects over time on children’s behaviours and to study genetic and environmental interactions through generations. Young-HUNT1 includes 6980 triads of mother, father and child, and Young-HUNT3 includes 3800 such triads. In addition, it is possible to link data to ongoing national registers covering all participants, like the Cancer Register, Causes of Death Register, Prescription Register, Social Security Registers, Education Register, Income and Tax Register and Hospital Disease Registers.

### Table 2 Characteristics at baseline (Young-HUNT1) of participants compared with non participants in the 4-year follow-up study from early adolescence (Young-HUNT1) to late adolescence (Young-HUNT2)

<table>
<thead>
<tr>
<th>Baseline characteristics</th>
<th>Participants</th>
<th>Non-participants</th>
<th></th>
<th>Participants</th>
<th>Non-participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, years (SD)</td>
<td>14.5 (0.9)</td>
<td>15.3 (1.1)</td>
<td>14.4 (0.9)</td>
<td>15.3 (1.1)</td>
<td></td>
</tr>
<tr>
<td>Mean BMI, kg/m² (SD)</td>
<td>20.6 (3.1)</td>
<td>21.3 (3.2)</td>
<td>20.2 (2.9)</td>
<td>20.8 (3.1)</td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure, (mm Hg)</td>
<td>119.1 (11.2)</td>
<td>119.7 (11.5)</td>
<td>121.9 (12.5)</td>
<td>123.9 (13.1)</td>
<td></td>
</tr>
<tr>
<td>Heart rate, bpm</td>
<td>75.2 (13.7)</td>
<td>75.2 (13.7)</td>
<td>74.1 (13.1)</td>
<td>73.0 (13.4)</td>
<td></td>
</tr>
<tr>
<td>Daily smoking, % (CI)</td>
<td>4.3 (3.2–5.2)</td>
<td>10.4 (8.8–12.0)</td>
<td>3.7 (2.6–4.8)</td>
<td>10.7 (9.1–12.3)</td>
<td></td>
</tr>
<tr>
<td>High physical activity, % (CI)</td>
<td>23.7 (21.4–26.0)</td>
<td>20.0 (17.9–22.1)</td>
<td>36.1 (33.3–38.9)</td>
<td>31.7 (29.3–34.1)</td>
<td></td>
</tr>
<tr>
<td>Very good self-perceived health, % (CI)</td>
<td>27.6 (25.2–30.1)</td>
<td>21.1 (19.0–23.9)</td>
<td>41.2 (38.3–44.1)</td>
<td>32.1 (29.6–34.4)</td>
<td></td>
</tr>
<tr>
<td>Parental smoking, % (CI)</td>
<td>44.8 (41.9–47.7)</td>
<td>46.0 (43.3–48.7)</td>
<td>52.8 (50.2–55.4)</td>
<td>53.1 (50.5–55.7)</td>
<td></td>
</tr>
</tbody>
</table>

aSD, standard deviation; BMI, body mass index; bpm, beats per minute; CI, confidence interval.

bExercise until sweaty or breathless 4 days a week or more.
What has been measured?

Data have been collected through self-reported questionnaires (mostly using validated questions and scales), interviews and measurements which were performed by specially trained nurses according to the same standardized protocols and equipments (Table 4) (http://www.ntnu.edu/hunt).

The Young-HUNT1 survey questionnaire included questions about somatic and mental health problems, well-being, lifestyle, diet, school and leisure time activities, reading and writing difficulties and puberty. Structured interviews on asthma and allergy and headache were conducted and height, weight, waist and hip circumference, blood pressure, heart rate and spirometry were measured in all participants. A sub-study on asthma and allergy was conducted. Validation studies of the headache interview and the physical activity questions were performed.

The Young-HUNT2 survey included the same questionnaire, interviews and measurements (except blood pressure) as Young-HUNT1.

The Young-HUNT3 survey included the core questions from Young-HUNT1 and 2, but was more extensive and included pain, acne, traumatic happenings (e.g lost a loved one or been violently hurt), social anxiety and resilience. Interviews on asthma and allergy, headache and social anxiety were conducted, and the same measurements as in Young-HUNT1 were performed. In addition, buccal smears for genetic analyses were collected. Fitness tests measuring maximum oxygen uptake, vision tests and examinations of acne and social anxiety were performed in subgroups.

The HUNT3 survey included two comprehensive questionnaires on health, lifestyle and socioeconomic position with the second questionnaire designed for the age group 20–29 years repeating some Young-HUNT questions. Height, weight, waist and hip circumference, blood pressure and heart rate were measured in all and spirometry, max-O₂ uptake, bone mass density and echocardiography were measured in subgroups. Blood samples were collected from all.

What has it found? Key findings and publications

So far, more than 50 peer reviewed papers have been published, 11 doctorial theses have been completed and presently more than 20 PhD students and post-doc students from different research groups are working with the data. A full list of papers may be found at the HUNT web site http://www.ntnu.edu/hunt/young-hunt.

Papers from the Young-HUNT study have presented prevalence and trends of health problems and risk behaviour in adolescence, in addition to studies with generational and longitudinal perspectives. Main topics have been respiratory and allergic problems, overweight and obesity, pubertal timing, eating problems, and mental health, headaches and subjective health problems, tobacco and alcohol use, risk factors for later cardiovascular diseases, physical activity and school problems.

Data have shown the usefulness of combining exhaled nitric oxide (NO) and hyper-responsiveness in characterizing asthma and have focused on the increased risk of additional health problems in wheezing adolescents. Smoking has been found to have a larger effect on symptoms of wheeze and lung function in girls compared with boys, and girls seem more susceptible than boys to overweight as a potential risk factor for bronchial asthma. Moreover, girls with mothers having asthma were more likely to be diagnosed as asthmatics themselves.

Overweight and obesity in adolescence have been increasing, more so in boys than girls, but surprisingly, comparing Young-HUNT1 data with a comparable teenage cohort from the county in the late 1960s
showed that at the same time the thinnest boys and girls (lower percentiles) had actually become thinner.\textsuperscript{14,15} This will be followed in the more recent longitudinal studies. Debating overweight prevention, Young-HUNT data have shown that healthy changes in parental lifestyle during childhood may be associated with lower occurrence of offspring overweight in adolescence.\textsuperscript{16}

Several studies have focused on gender differences, one demonstrating that predictors for positive engagement in physical activity (PA) through adolescence may differ between girls and boys, indicating that PA-promoting interventions would profit from tailoring by gender.\textsuperscript{35} Another demonstrated that girls with low birthweight had earlier menarche.\textsuperscript{20} Early menarche in girls was associated with more advanced drinking and higher frequency of smoking in late adolescence, not found in boys with early sexual maturing.\textsuperscript{31}

### Table 4: Content of the different Young-HUNT surveys

<table>
<thead>
<tr>
<th>Phase</th>
<th>Measurements</th>
</tr>
</thead>
</table>
| Baseline: The Young-HUNT1 survey 1995–97 | **Self-reported questionnaire:** Somatic health problems with main focus on respiratory and allergic diseases, subjective health problems, different types of headaches and eating problems including overweight and obesity. Mental health includes anxiety and depression, self-esteem, personality and well-being. Health behaviours with focus on alcohol use, tobacco use, diet, regularity of meals, dieting and physical activity. In addition puberty, school problems, leisure time activity and traumatic happenings  
**Interview:** Asthma and allergy, headaches  
**Anthropometric measures:** Weight, height, waist & hip circumference  
**Blood pressure and heart rate** were measures using a Criticare\textsuperscript{®} 506 monitor, oscillometric upon inflation  
**Spirometry** Lung function was measured according to the ATS criteria using a Jaeger\textsuperscript{®} portable spirometer |
| Follow-up: The Young-HUNT2 survey 2000–01 | **Questionnaire:** Same as Young-HUNT1 (above)  
**Interview:** Asthma and allergy, headache  
**Anthropometric measures:** Weight, height, waist & hip circumference  
**Spirometry** |
| Follow-up: The HUNT3 survey 2006–08 (adults)  
Methods previous described\textsuperscript{3} | **Self reported questionnaires:** Two extensive questionnaires including illness, diseases, behavioural risk factors and socio-economic position. Additional questionnaires for specific diseases  
**Anthropometric measures:** Weight, height, waist & hip circumference  
**Blood pressure and heart rate**  
**Subgroups:** Spirometry (in all Young-HUNT1 participants), bone density (DTX, DEXA), max O\textsubscript{2}-uptake, echocardiography, dental status  
**Venous blood samples:** Analysed (cholesterol (total and HDL)), glucose, triglycerides, TSH) and stored blood samples  
**Urine** (sub-groups) |
| New baseline:  
The Young-HUNT3 survey 2006–08 | **Self-reported questionnaire:** Core questions from Young-HUNT1 (above). In addition a broader focus on pain, acne, social anxiety, school and leisure time activities and traumatic happenings  
**Interview:** Asthma and allergy, headache, social anxiety, in subgroups: acne, social anxiety by specialists  
**Anthropometric measures:** Weight, height, waist & hip circumference  
**Blood pressure and heart rate**  
**Spirometry**  
**Buccal swabs** for genetic analyses, stored on FTA papers  
In subgroups: Max O\textsubscript{2} uptake |
| New HUNT studies | A new HUNT study is planned for every 11th year. Young-HUNT1 and Young-HUNT3 participants will be followed up in HUNT4 |
| Linkage to register data | Updated linkage to different national registers data is available |
work integration as young adults needs attention\(^3\)\(^8\) and suggests preventive measures on an individual as well as on a societal level. An association found between reading and writing difficulties in adolescence and welfare dependence later in life also suggests that increased attention should be paid to these problems\(^3\)\(^6\).

**What are the main strengths and weaknesses?**

The Young-HUNT study is population based and has a high attendance rate. The questionnaires are conscientiously completed with internal consistency between answers. As part of the HUNT study, the Young-HUNT study has high acceptance and confidence among both politicians and inhabitants of Nord-Trøndelag County. The thorough planning, conduct of the study in schools, the acceptance gained from the school authorities and from each school and the information provided to all teachers contributed to the high attendance rate.

However, the response rate of adolescents not in school was very low. Prevalence of risky health behaviours and health problems might therefore be underestimated. From 1995–97 to 2006–08 an increasing number of students were dropping out of high schools. This is an important group to follow. A present study using Young-HUNT1 data as baseline merged with the Norwegian National Education Register and the National Insurance Administration is set up to study health and exclusion from the workforce in young people who have not completed high school by the age of 24. The future HUNT4 survey will also focus on this issue.

Nord-Trøndelag county has no large cities, but preliminary data from a similar study in the same age groups performed in Trondheim, the third largest city in Norway, situated just south of the county, indicates that Young-HUNT data may be generalizable also to this urban area.

Being population-based repeated surveys with high attendance rates within the same county, the Young-HUNT study is able to demonstrate trends in prevalence of important health risk factors. Longitudinal studies are likewise important. Follow-up through participation in the HUNT3 study (adults) yielded a lower participation rate than expected, as the general participation rate in the young adults under the age of 30 was low. In the future a targeted invitation to previous Young-HUNT participants will be suggested. A major strength of the Young-HUNT Study is the possibility of linkage to the different registers described above. In addition to longitudinal studies with low attrition, linkage to the Family Register makes it possible to perform generational studies with a high number of participants.

**Can I get hold of the data? Where can I find out more?**

The Young-HUNT database is available for all researchers affiliated to a qualified research institution. Agreements are drawn up between the institution and the Faculty of Medicine, Norwegian University of Technology and Science, Trondheim. Applications are to be sent to HUNT Research Centre and each project also needs to be approved by the Regional Committee for Medical and Health Research Ethics (REC) in Mid-Norway. Detailed information is found on the HUNT website [http://www.ntnu.edu/hunt](http://www.ntnu.edu/hunt).

Enquiries may also be directed to: Professor Turid Lingaas Holmen, HUNT Research Centre, e-mail: turid.lingaas.holmen@ntnu.no

**Funding**

The Young-HUNT1 and 2 surveys were funded by the Norwegian Ministry of Health, the Norwegian Research Council, the Nord-Trøndelag County Council and the Norwegian Women’s Public Health Association in addition to contributions to sub-studies from research groups. The pharmaceutical company AstraZeneca Norway funded the respiratory part of the clinical study. The Young-HUNT3 survey was funded as part of the HUNT3 study, again mainly by public funding.\(^3\)

**Conflict of interest:** None declared.

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**KEY MESSAGES**

- Girls have caught up with boys in regard to both alcohol drinking and smoking, whereas the increase in overweight and obesity has been larger in boys. Healthy changes in parental lifestyle during childhood may prevent overweight in their teenage offspring.
- Girls who smoke report more wheeze with a larger effect on lung function compared with boys, and girls with mothers who have asthma seem more likely to be diagnosed with asthma themselves.
• Blood pressure reference values in adolescents have been published discussing methodological aspects and suggesting blood pressure reference tables for Northern Europe.19

• Ongoing studies are focusing on candidate genes concerning obesity, eating disorders and metabolic disease in a generational perspective using triads of children, mothers and fathers.

References


