ISRCTN15689873 https://doi.org/10.1186/ISRCTN15689873

The COVID-19 pandemic and changes in physical activity patterns, mental health and academic performance in Swedish adolescents

Submission date
08/06/2021

Recruitment status
No longer recruiting

Registration date
17/06/2021

Overall study status
Completed

Last Edited
04/07/2024

Condition category
Other

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
The COVID-19 pandemic has had a large impact on the daily lives of adolescents in Sweden. For many students learning has moved from being in a physical classroom to a virtual classroom at home. As a result, students report that they have learned less during the pandemic. Physical education has also been taught at a distance or outdoors. Furthermore, due to the shift to virtual learning, students have lost access to a free lunch, which in many cases was their main source of fruits and vegetables. Adolescents are also less likely to participate in organized sports, as sports associations have had to adapt or completely cancel their activities. The social restrictions have also resulting in that adolescents are less likely to meet friends or adults outside their own household. Reports suggest that these and other factors related to the COVID-19 pandemic are likely to have an impact on academic performance and health-related factors in adolescents. The aim of this study is to investigate changes in mental health, academic performance and lifestyle factors among Swedish adolescents before and during the COVID-19 pandemic.

Who can participate?
Adolescents aged 14-15 (grade 8) who participated in the baseline measurements in 2019 before the COVID-19 pandemic (autumn 2019)

What does the study involve?
Participants are invited to follow-up measurements during the pandemic (spring 2021). During the baseline measurements, the participants filled in a 3-day dietary recall, and participated in a fitness test and cognitive function tests. Their body weight, height and body fat were measured and they were equipped with an accelerometer for 7 days to assess physical activity patterns. Furthermore, a questionnaire with items covering mental health, dietary intake, stress, sleep, physical activity habits and screen-time was answered.
In the follow-up study (spring 2021) participants will answer a shorter version of the questionnaire and use an accelerometer for 7 days. The questionnaires and accelerometers will be distributed by the schools or sent out by post. Physical activity patterns are measured by accelerometry, mental health (health-related quality of life and anxiety) is assessed with

questionnaires, and academic performance is assessed with school grades (Swedish and mathematics). The questionnaire also includes items on psychosomatic health, stress, sleep, physical activity habits and screen-time. Additional questions have been added in the follow-up questionnaire regarding the students' current school situation, i.e. the amount of distance learning and resources at home, and changes in behavior during the pandemic. Register data on parental education will also be collected and used as an indicator of socioeconomic position.

What are the possible benefits and risks of participating?
If the questionnaire is answered at school, some participants might feel uncomfortable answering certain questions i.e. regarding their mental health. Further, students might feel pressured by their classmates to participate or not participate in the study. The benefits include gaining more knowledge about if the COVID-19 pandemic has resulted in changes in mental health, physical activity and academic performance and which factors mediate or moderate this change. This knowledge will be beneficial to school personnel and policymakers in future pandemics. Further, the participants will receive a gift card of 150 SEK for participating in the follow-up measurement.

Where is the study run from?
The Swedish School of Sport and Health Sciences (Gymnastik- och idrottshögskolan) (Sweden)

When is the study starting and how long is it expected to run for?
January 2021 to November 2021

Who is funding the study?
1. Idéer för livet, Skandia (Sweden)
2. The Public Health Agency of Sweden

Who is the main contact?
Gisela Nyberg
gisela.nyberg@gih.se

Contact information

Type(s)
Scientific

Contact name
Dr Gisela Nyberg

ORCID ID
https://orcid.org/0000-0003-0004-8533

Contact details
Gymnastik- och idrottshögskolan (GIH)
Box 5626
Stockholm
Sweden
114 86
+46 (0)706009179
gisela.nyberg@gih.se

Additional identifiers

Study information

Scientific Title
The COVID-19 pandemic and secular changes in physical activity patterns, mental health and academic performance in Swedish adolescents: a cohort study

Study objectives
The primary hypothesis is that during the COVID-19 pandemic there has been a change in physical activity patterns, mental health, eating habits, sleep, screen time and academic performance among adolescents. The second hypothesis is that gender, socioeconomic status, extent of distance learning, participation in organized sports, as well as baseline levels of mental health, cognitive function, academic performance, fitness, physical activity patterns and eating habits will moderate or mediate the effects of the pandemic.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 21/03/2021, Swedish Ethical Review Authority (Etikprövningsmyndigheten, Box 2110, 750 02, Uppsala, Sweden; +46 (0)10-475 08 00; registrator@etikprovning.se), ref: 2021-01235

Primary study design
Observational

Study design
Observational cross-sectional cohort study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Physical activity patterns, mental health and academic performance before and during the COVID-19 pandemic in Swedish adolescents

Interventions
During the baseline measurements (autumn 2019) the participants answered a questionnaire with items covering mental health, dietary intake, stress, sleep, physical activity habits and screen-time. Furthermore, the participants filled in a 3-day dietary recall, participated in a sub-maximal fitness test and a cognitive function test battery. Body weight, height and body fat were measured and the participants were equipped with an accelerometer for 7 days to assess physical activity patterns.

A few months after the baseline measurements, the COVID-19 pandemic started, which had a large impact on the daily lives of adolescents in Sweden. Therefore, a follow-up measurement was planned to investigate secular changes in physical activity patterns, mental health and academic performance in Swedish adolescents before and during the COVID-19 pandemic.

In the follow-up measurement (spring 2021) a short version of the questionnaire provided at baseline will be used. The questionnaire includes items on mental health, stress, sleep, dietary intake, physical activity habits and screen-time. Additional questions have been added in the follow-up questionnaire regarding the students' current school situation i.e. the amount of distance learning and resources at home, and changes in behaviors during the pandemic. To assess physical activity patterns, the participants will wear an accelerometer for 7 days.

Register data will be collected on academic performance measured by grades at baseline and follow-up, as well as parental education.

Intervention Type
Other

Primary outcome(s)
1. Physical activity patterns measured by accelerometry at baseline and follow-up
2. Anxiety assessed with a questionnaire (SCAS-S) at baseline and follow-up
3. Health-related quality of life (HRQoL) measured using Kidscreen-10 at baseline and follow-up
4. Academic performance measured by grades (Swedish and mathematics) from registry data at baseline and follow-up

Baseline: autumn 2019, follow-up: spring 2021

Key secondary outcome(s)
1. Stress measured using single-item stress question (SISQ) (questionnaire) at baseline and follow-up
2. Psychosomatic health assessed using the PsychoSomatic Problems Scale (PSP) at baseline and follow-up
3. Sleep quality and duration measured using an adapted version of Karolinska Sleep Questionnaire at baseline and follow-up
4. Self-reported screen-time measured using a questionnaire at baseline and follow-up
5. Participation in organized sports measured using a questionnaire at baseline and follow-up
6. Dietary habits measured using a questionnaire at baseline and follow-up
7. Current school situation (i.e. the amount of distance learning and resources at home) measured using a questionnaire at follow-up
8. Changes in behaviors during the pandemic measured using a scale developed by Kapetanovic et al (2021) at follow-up

Baseline: autumn 2019, follow-up: spring 2021

Completion date
01/11/2021

Eligibility

Key inclusion criteria
Inclusion criteria at baseline:

Inclusion criteria (schools):
Schools within 2 hours of Stockholm, Sweden

Inclusion criteria (students):
Students attending grade 7 in the participating schools

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Child

Sex
All

Total final enrolment
1139

Key exclusion criteria
Schools (at baseline):
1. Schools with less than 15 students in grade 7
2. Schools with a sports profile

Participants (at baseline)
Students not able to understand Swedish

Date of first enrolment
25/03/2021

Date of final enrolment
01/11/2021

Locations

Countries of recruitment
Sweden

Study participating centre
The Swedish School of Sport and Health Sciences (Gymnastik- och idrottshögskolan)
Lidingövägen 1
Stockholm
Sweden
114 33

Sponsor information

Organisation
Swedish School of Sport and Health Sciences

ROR
https://ror.org/046hach49

Funder(s)

Funder type
Charity

Funder Name
Ideer för livet, Skandia

Funder Name
Folkhälsomyndigheten

Alternative Name(s)
Public Health Agency of Sweden

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Sweden

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analyzed during the current study are not expected to be made available as no ethical permission have been obtained to share the participant-level data outside the research group. The data will be held at secure servers at the Swedish School of Sport and Health Sciences.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?

Results article		10/03/2023	28/03/2023	Yes	No
Results article		23/02/2023	04/07/2024	Yes	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes