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Youth-GEMS: Understanding genetic and environmental interactions in youth mental health

Submission date	Recruitment status	[X] Prospectively registered
21/12/2023	Recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
30/01/2024	Ongoing	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
12/02/2024	Mental and Behavioural Disorders	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The first symptoms of mental illness usually begin during youth, the developmental stage between 12 and 24 years of age. The first manifestations of mental illness are often subtle and do not meet diagnostic criteria for specific diagnoses. This period is critical because early detection and treatment can maximize recovery and may even prevent the progression of illness. However, there is not enough knowledge about how early symptoms may predict later mental health, which poses difficulties in deciding treatment plans and assessing risk. The Youth-GEMs project aims to bridge this gap by studying young people who are in the first stages of mental illness during two years, with the objective of developing a model that will allow predicting the individual's risk and aid in prevention and treatment.

Who can participate?
People between 12 and 24 years of age who are attending specialised mental-health services for the first time.

What does the study involve?
Participants will fill in a questionnaire about their health, life experiences, symptoms and coping mechanisms every 3 months for 2 years. At baseline, they will also undergo a clinical interview with a mental health professional, a test on attention and memory (among other cognitive functions), and will give a blood or saliva sample.

What are the possible benefits and risks of participating?
This study is not testing any intervention or drug, therefore we do not expect any benefit of participating other than the experience of helping advance scientific knowledge. The risks are considered minimal. A common risk of blood extractions is a small bruise in the place where blood was taken, but it often resolves spontaneously in a few days. Another risk is a possible data breach. However, all scientists involved in this study have received training in data protection and are using the safest servers to store data to minimize this risk.

Where is the study run from?
The study is run from six sites in Europe: Madrid (Spain), Maastricht (The Netherlands), Oulu (Finland), Belgrade (Serbia), Split (Croatia) and Tartu (Estonia). All the sites will be coordinated from the leaders from Hospital General Universitario Gregorio Marañón (Spain) and Oulu University (Finland).

When is the study starting and how long is it expected to run for?
June 2021 to January 2026

Who is funding the study?
The European Union (EU)

Who is the main contact?
Dr. Covadonga Martínez Díaz-Caneja, covadonga.martinez@iisgm.com

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
101057182

Study information

Scientific Title
Gene-Environment interactions in Mental health trajectories of Youth (Youth-GEMs Cohort)

Acronym
Youth-GEMs-Cohort

Study objectives
1. The researchers will be able to characterise multidimensional latent risk and resilience mental health trajectories in a trans-syndromal sample of help-seeking young people.
2. The quality of life trajectories will have genetic, environmental, biological, clinical, cognitive and digital predictors.
3. The researchers will be able to cross-validate clinical and digital predictors in help-seeking youth.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 07/02/2024, Comité de Ética de la Investigación con Medicamentos (CEIm) Hospital General Universitario Gregorio Marañón / Ethics Committee in Research with Drugs Gregorio Marañón Hospital (C/ Dr. Esquerdo 46, Pabellón de Gobierno, Madrid, 28007, Spain; +34 (0)91 586 7007 - 91 426 9378; ceim.hgugm@salud.madrid.org), ref: 313/23

Study design
Multicenter non-interventional observational study

Primary study design
Observational

Study type(s)
Other, Prevention, Quality of life, Treatment

Health condition(s) or problem(s) studied
Non-chronic emerging mental health symptoms

Interventions
Participants will be referred to the study by experienced clinicians. If they agree to participate, research staff will cite them in-site for informed consent procedures and baseline visit. During the baseline visit, participants will undergo a blood extraction, clinical interview and neurocognitive assessment with a trained psychologist or psychiatrist of the study. They will also download the app under their guidance and have the opportunity to ask questions. Finally, they will be asked to complete a self-report questionnaire in REDCAP. The follow-up visits will be conducted remotely through the REDCAP survey, although all participants will be able to contact their site project coordinator to ask questions, request a telephone call to guide them through the questionnaire or troubleshoot REDCAP issues. Participation will end after the 24-month follow-up assessment.

Intervention Type
Genetic

Primary outcome(s)
Quality of life, with general wellbeing, daily functioning, relationships with friends, relationships with family and coping as subdomains, measured with the MyLifeTracker outcome measure at baseline, and 3, 6, 12, 18 and 24 months follow-up

Key secondary outcome(s))
Clinical dimensions:
1. Anxiety and depression measured with the RCADS at baseline, and 3, 6, 12, 18 and 24 months follow-up
2. Distress tolerance measured with the DTS-short at baseline, and 3, 6, 12, 18 and 24 months follow-up
3. Current mania measured with the Altman Self-rating Mania Scale at baseline, and 3, 6, 12, 18 and 24 months follow-up
4. Psychotic-like symptoms measured with the Prodromal Questionnaire (PQ-16) and the PEI at baseline, and 3, 6, 12, 18 and 24 months follow-up

5. Dissociative symptoms measured with the DES-B at baseline, and 3, 6, 12, 18 and 24 months follow-up
6. Suicidality measured with the Columbia Suicide Severity Rating scaleat baseline, and 3, 6, 12, 18 and 24 months follow-up
7. Non-suicidal self-harm measured at baseline, and 3, 6, 12, 18 and 24 months follow-up
8. General psychopathology measured with the Strenghts and Difficulties Questionnaire (SDQ) at baseline, and 3, 6, 12, 18 and 24 months follow-up
9. Eating disorders measured with the Eating Disorder Screen for Primary Care at baseline, and 3, 6, 12, 18 and 24 months follow-up
10. Obsessions and intrusive thoughts measured with the Obsessional Compulsive Inventory - Child self report at baseline, and 3, 6, 12, 18 and 24 months follow-up
11. Childhood Trauma measured with the Childhood Trauma Questionnaire - brief at baseline
12. Stressful life events measured with an ad-hoc questionnaire at baseline, and 3, 6, 12, 18 and 24 months follow-up
1. Bullying and cyberbullying measured with an ad-hoc questionnaire at baseline and 3, 6, 9 and 12 months follow-up
2. PTSD symptoms measured with the UCLA PTSD Reaction Index for DSM-5 Brief form at baseline and 12 months follow-up
3. Family and social environment measured with an ad-hoc questionnaire at baseline
4. Parental bonding measured with the Relationship Structures (ECR-RS) questionnaire and peer bonding measured with the Attachment Questionnaire for Children (AQC) at baseline and 12 and 24-month follow-up.
5. Alcohol use and abuse measured with the AUDIT at baseline, and 3, 6, 12, 18 and 24 months follow-up
6. Drug use and abuse measured with the DUDIT at baseline, and 3, 6, 12, 18 and 24 months follow-up

Lifestyle and behavioural factors:
1. Internet and social media use measured with the Social Media Disorder Scale at baseline, and 3, 6, 12, 18 and 24 months follow-up
2. Gaming disorder measured with the Nine-Item Internet Gaming Disorder Scale at baseline, and 3, 6, 12, 18 and 24 months follow-up
3. History of crime and violent behaviour measured with an ad hoc questionnaire at baseline, and 3, 6, 12, 18 and 24 months follow-up

Physical health:
1. General health measured with the EQ-5D-Y at baseline, and 3, 6, 12, 18 and 24 months follow up
2. Disability measured using 12-item Self-Report World Health Organization Disability Assessment Schedule (WHODAS) at baseline, and 3, 6, 12, 18 and 24 months follow-up
3. Sleep and circadian alterations measured with the PROMIS Sleep Disturbance and Sleep-Related Impairment in Adolescents at baseline, and 3, 6, 12, 18 and 24 months follow-up

Psychological mechanisms, subjective experience and existential dimensions:
1. Coping mechanisms measured with the Brief COPE at baseline, and 3, 6, 12, 18 and 24 months follow-up
2. Resilience measured with the Brief Resilient Coping Scale at baseline, and 3, 6, 12, 18 and 24 months follow-up
3. Self-esteem measured with the Multidimensional Wellbeing in Youth Scale – self-confidence dimension at baseline, and 3, 6, 12, 18 and 24 months follow-up
4. Well-being measured with the EPOCH measure of adolescent well-being at baseline, and 3, 6, 12, 18 and 24 months follow up

5. Callous/unemotional traits measured with the INventory of Callous-Unemotional Traits and Antisocial Behavior (INCA) for Young People at baseline, and 3, 6, 12, 18 and 24 months follow-up
6. Reward responsiveness measured with the BAS Reward Responsiveness & Frustrative Nonreward Responsiveness Subscale at baseline, and 3, 6, 12, 18 and 24 months follow-up
7. Irritability measured with the Affective Reactivity Index at baseline, and 3, 6, 12, 18 and 24 months follow-up

Completion date
02/01/2026

Eligibility

Key inclusion criteria
1. Aged 12-24 years
2. Less than 1 month from the first contact with mental health services
3. Good command of the languages used in the study
4. Written informed consent by the participant and their parents and legal representatives, when appropriate

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
12 years

Upper age limit
24 years

Sex
All

Key exclusion criteria
1. Intellectual disability with associated functional impairment
2. Severe neurological or medical condition
3. Genetically confirmed neurobehavioral syndromes
4. Significant difficulties in completing the self-reported questionnaires

Date of first enrolment
02/03/2024

Date of final enrolment
02/01/2026

Locations

Countries of recruitment
Croatia

Estonia

Finland

Netherlands

Serbia

Spain

Study participating centre
Fundacion para la Investigacion Biomedica del Hospital Gregorio Maranon
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Sponsor information

Organisation
Hospital General Universitario Gregorio Marañón

ROR
https://ror.org/0111es613

Organisation
University of Edinburgh

ROR
https://ror.org/01nrxwf90

Organisation
University of Split

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Organisation
Clinic for Neurology and Psychiatry for Children and Youth

Organisation
Maastricht University

ROR
https://ror.org/02jz4aj89

Organisation
Tartu Ulikool

Funder(s)

Funder type
Research council

Funder Name
HORIZON EUROPE European Research Council: HORIZON-HLTH-2021-STAYHLTH-01 Grant Agreement number: 101057182

Alternative Name(s)
European Research Council, Horizon Europe - European Research Council, EU - Horizon Europe - ERC, European Research Council (ERC), ERC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be available upon request from Dr Covadonga Martínez (covadonga.martinez@iisgm.com)

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet Study website	11/11/2025	11/11/2025	No	Yes

Study website	11/11/2025	11/11/2025	No	Yes