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Effects of ω-3 polyunsaturated fatty acid supplementation in the treatment of adolescents with depressive disorder

Submission date
23/02/2022

Recruitment status
No longer recruiting

Registration date
12/03/2022

Overall study status
Ongoing

Last Edited
30/08/2022

Condition category
Mental and Behavioural Disorders

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Depressive disorder (DD) has become a common recurrent disease among adolescents and the treatment of adolescent DD is inadequate and less effective. The rate of receiving treatment in adolescent depression is lower than that in adults, and antidepressants and psychotherapy that are effective in the treatment of depression in adults have a limited effect in adolescents. Therefore, there is an urgent need for safer and more effective treatments for adolescent depression. Several clinical trials have shown that the use of polyunsaturated fatty acids (PUFAs) is a safe and effective adjuvant therapy in adult DD but studies are very limited in adolescents. The aim of this study is to evaluate the effect of ω-3 PUFA extra supplementation in adolescent depression, and explore whether the niacin skin flushing response relates to depressive symptoms.

Who can participate?
Adolescents aged 14-25 years with depression who are registered at the Fourth People's Hospital of Wuhu

What does the study involve?
Patients are randomly allocated to one of two groups. Those in the first group only take the antidepressant paroxetine every day for 12 weeks. Those in the second group take three capsules of ω-3 PUFA rich fish oil per day for 12 weeks in addition to paroxetine treatment. The niacin skin flushing response and the severity of depressive symptoms, cognition, and memory conditions are assessed by trained psychiatrists before treatment and at weeks 4, 8, and 12. Blood samples are taken at weeks 0 and 12.

What are the possible benefits and risks of participating?
Participants who receive the PUFA may benefit from a reduction of their depressive symptoms. There are no known risks involved with participating.

Where is the study run from?
1. Shanghai Jiao Tong University (China)
2. The Fourth People's Hospital of Wuhu (China)

When is the study starting and how long is it expected to run for?
April 2020 to December 2025

Who is funding the study?
1. Health Commission of Anhui Province (China)
2. Natural Science Foundation of Shanghai (China)
3. Shanghai Jiao Tong University (China)

Who is the main contact?
Shuhui Li
23020419960929172 6@sjtu.edu.cn

Contact information

Type(s)
Principal Investigator

Contact name
Dr Ying Qing

ORCID ID
http://orcid.org/0000-0001-5846-9248

Contact details
No. 1954, Huashan Road
Shanghai
China
200030
+86 (0)21 62932779
qingying@sjtu.edu.cn

Type(s)
Scientific

Contact name
Miss Shuhui Li

ORCID ID
http://orcid.org/0000-0002-3120-495X

Contact details
No. 1954, Huashan Road
Shanghai
China
200030
+86 (0)5606971686
23020419960929172 6@sjtu.edu.cn

Type(s)
Public

Contact name
Miss Shuhui Li

Contact details
No. 1954, Huashan Road
Shanghai
China
200030
+86 (0)15606971686
23020419960929172 6@sjtu.edu.cn

Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
Nil known

Study information

Scientific Title
Effects of ω-3 polyunsaturated fatty acid supplementation on depressive symptoms, cognition conditions and plasma metabolome in adolescent patients with depressive disorder

Acronym
PUFA DD

Study objectives
The aim of this study is to evaluate the therapeutic effects of ω-3 polyunsaturated fatty acid (PUFA) supplementation combined with paroxetine in adolescent patients with depression, and explore whether niacin skin flushing response is related to depressive symptoms.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 21/04/2020, Ethical Committee of the Fourth People's Hospital of Wuhu (No.1, Wuxiashan East Road, Wuhu City, Anhui Province, China; +86 (0)553 3028569; xiazhongxiansheng@163.com), ref: not applicable

Study design
Single-centre interventional open-label randomized controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
Not applicable

Health condition(s) or problem(s) studied
Depressive disorder

Interventions
Patients are randomly assigned to take paroxetine alone (paroxetine group, n = 37) and ω-3 PUFA rich fish oil in addition to paroxetine (ω-3 PUFA + paroxetine group, n = 34) for 12 weeks, according to a computer-generated random sequence using block randomisation with random block sizes. The randomisation is performed by the independent statistician. Patients are enrolled and assigned sequentially to adjuvant interventions by the physician. The allocation sequence is not available to any member of the research team until the databases had been completed and locked.

The dose of paroxetine is 20 mg per day and ω-3 PUFA rich fish oil is three capsules per day (providing 2700 mg of total ω-3 PUFA; 1941 mg EPA and 759 mg DHA, EPA:DHA ratio = 2.56:1).

The severity of depressive symptoms, cognition and memory conditions are assessed by trained psychiatrists using the Montgomery-Asberg Depression Rating Scale (MADRS), Montreal Cognitive Assessment (MoCA) and Wisconsin Card Sorting Test (WCST), and Wechsler Memory Scale (WMS), respectively, before therapy (baseline), and at weeks 4, 8, and 12. Niacin skin flushing response is tested at the week 0, 4, 8 and 12. Blood samples are taken at weeks 0 and 12.

Intervention Type
Supplement

Primary outcome measure
Depressive symptoms measured using the Montgomery-Osberg Depression Rating Scale (MADRS) at baseline, weeks 4, 8, and 12

Secondary outcome measures
1. Cognition conditions measured using Montreal Cognitive Assessment (MoCA) and Wisconsin Card Sorting Test (WCST) at baseline, weeks 4, 8, and 12
2. Memory conditions measured using Wechsler Memory Scale (WMS) at baseline, weeks 4, 8,

and 12
3. Niacin skin flushing response test using six different concentrations (triple gradient dilution from 60 mM) of niacin dropped onto the skin at baseline, weeks 4, 8, and 12
4. Plasma metabolome measured using ultrahigh-performance liquid chromatography-quadrupole orbitrap mass spectrometry at baseline and week 12
5. Membrane lipids measured using gas chromatography mass spectrometry at baseline and week 12

Overall study start date
01/04/2020

Completion date
31/12/2025

Eligibility

Key inclusion criteria
Current inclusion criteria as of 30/08/2022:
1. Meet the diagnostic criteria of International Classification of Diseases (ICD-10) for depressive disorder
2. Aged 13-24 years
3. Never received antidepressant medication, or have not received antidepressant medication within 2 weeks
4. The patient's family members or legal guardians fully understood the content of this study and signed informed consent

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Previous inclusion criteria:
1. The diagnostic criteria of International Classification of Diseases (ICD-10) for depressive disorder
2. 14-25 years old
3. Never received antidepressant medication, or have not received antidepressant medication within 2 weeks
4. The patient's family members or legal guardians fully understood the content of this study and signed informed consent

Participant type(s)
Patient

Age group
Mixed

Sex
Both

Target number of participants
71 = 37 in paroxetine group and 34 in ω-3 PUFA + paroxetine group

Total final enrolment
66

Key exclusion criteria
1. People diagnosed with bipolar disorder or other according to the ICD-10
2. A recent or past history of alcohol and drug dependence, other psychiatric disorders, eating disorders or mental retardation
3. Serious or chronic physical disease, endocrine disease or organic brain diseases
4. Regular consumption of ω-3 PUFA supplements or eating fish equal to or more than 4 times per week
5. Conducting additional clinical trials within 4 weeks prior to the start of this study

Date of first enrolment
29/11/2020

Date of final enrolment
01/01/2022

Locations

Countries of recruitment
China

Study participating centre
The Fourth People's Hospital of Wuhu
Wuxiashan East Road
Wuhu
China
241002

Sponsor information

Organisation
Shanghai Jiao Tong University

Sponsor details
No. 1954, Huashan Road
Shanghai
China
200030
+86 (0)21 62833148
wangjinfeng@sjtu.edu.cn

Sponsor type
University/education

Website
http://en.sjtu.edu.cn/

ROR
https://ror.org/0220qvk04

Funder(s)

Funder type
Government

Funder Name
Health Commission of Anhui Province

Funder Name
Natural Science Foundation of Shanghai

Alternative Name(s)
Shanghai Natural Science Foundation, Shanghai Municipal Natural Science Foundation, Shanghai Municipal Natural Science Fund,

Funding Body Type
Government organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
China

Funder Name
Shanghai Jiao Tong University

Alternative Name(s)
, , Nanyang Public School, Nan Yang College of Chiao Tung, National Chiao Tung University, Jiao Tong University, SJTU

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
China

Results and Publications

Publication and dissemination plan

Planned publication in a high-impact peer-reviewed journal:
1. Clinical symptoms - 2022
2. Niacin skin flushing test - 2022
3. Molecular experiments - 2025

Intention to publish date

31/12/2022

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be available upon request from 23020419960929172 6@sjtu.edu.cn and qingying@sjtu.edu.cn. The data will be available beginning 3 months and ending 5 years following article publication. It can be shared with researchers who provide a methodologically sound proposal to achieve the aims in the approved proposal. To gain access, data requesters will need to sign a data access agreement. Consent from participants was obtained. Data will be de-identified by removing personally identifiable information.

IPD sharing plan summary

Available on request