Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Investigating the impact of artificial intelligence in reducing stress, anxiety, and increasing students' skills

Protocol summary

Study aim
Determining the impact of artificial intelligence in reducing stress, anxiety, and increasing students' skills

Design
This study is a quasi-experimental, two-group, double-blind study conducted on 30 female high school students in Izeh city (15 in each group). The students were assigned by simple randomization using the RAND function in Excel; each student was first given an identification code and, after sorting based on random numbers, was divided into two groups: an artificial intelligence-based intervention and a control group.

Settings and conduct
This study will use a field experimental research method and an extensive pre-test and post-test design. The research will be conducted in a girls' high school. All clinical caregivers and evaluators who interpret the data and all information will be kept confidential and participants will be given pseudonyms.

Participants/Inclusion and exclusion criteria
Inclusion criteria Being between 15 and 18 years of age. Being a secondary school student. Willingness to participate in the study. Exclusion criteria Having a physical illness that may interfere with the treatment process. Use of psychiatric medications.

Intervention groups
Intervention group: Teaching mathematics using artificial intelligence tools based on the Rezaei package (1403), in the form of 8 90-minute sessions, one session per week, and implemented in groups. This intervention will include the guided use of artificial intelligence systems to teach mathematical concepts, providing exercises appropriate to the students' learning level, receiving immediate feedback, troubleshooting, step-by-step problem solving, and practicing problem-solving skills. Control group: Will receive mathematics instruction in the traditional way.

Main outcome variables
Stress; Anxiety; Problem-solving skills

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20260815070657N1**
Registration date: **2026-08-28, 1405/06/06**
Registration timing: **prospective**

Last update: **2026-08-28, 1405/06/06**
Update count: **0**

Registration date
2026-08-28, 1405/06/06

Registrant information

Name
zinat davoodi

Name of organization / entity
Daneshgah azad eslami vahad izeh

Country
Iran (Islamic Republic of)

Phone
+98 61 4361 1111

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zintdaoodi74@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2026-09-21, 1405/06/30

Expected recruitment end date
2026-10-02, 1405/07/10

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Investigating the impact of artificial intelligence in reducing stress, anxiety, and increasing students' skills

Public title
Investigating the impact of artificial intelligence in reducing stress, anxiety, and increasing skills

Purpose
Education/Guidance

Inclusion/Exclusion criteria

Inclusion criteria:
Being between 15 and 18 years of age. Being a secondary school student. Willingness to participate in the study.

Exclusion criteria:
Having a physical illness that may interfere with the treatment process. Use of psychiatric medications.

Age
From **15 years** old to **18 years** old

Gender
Female

Phase
N/A

Groups that have been masked

- Care provider
- Outcome assessor
- Data analyser

Sample size
Target sample size: **30**

Randomization (investigator's opinion)
Randomized

Randomization description
In this study, simple randomization method is used to assign female high school students in Izeh city to two experimental and control groups. The randomization unit in this study is female high school students who meet the conditions for entering the study and have given their informed consent and that of their parents or legal guardians to participate in the study. First, a complete list of volunteer students who have been selected based on the study entry criteria is prepared. Then, each participant is assigned a unique numerical identification code. These codes are entered into the Random Number Generator software and a random number is generated for each student. After generating these numbers, the participants are sorted in ascending order based on the value of the random number. Then, individuals are assigned to two groups; sequentially, half of the students on the list are assigned to the experimental group and the other half to the control group.

Blinding (investigator's opinion)
Double blinded

Blinding description
In order to control bias and improve the internal validity of the research, this study was designed with a double-blind protocol; in this way, the outcome assessor (the one who measures the variables of stress, anxiety, and math skills) and the data analyst will be kept unaware of the allocation of female high school students in Izeh city to the experimental and control groups. In this process, the outcome assessor will administer stress, math anxiety, and math skills performance tests at all stages of the pre-test and post-test, without knowing the assigned group of the participants, in order to prevent bias in the assessment; also, all raw data will be provided to the statistical analyst with anonymous codes (such as groups 1 and 2), and the true nature of the groups will not be revealed until the end of the data analysis process. All allocation steps will be performed by an independent person from the research team, and the decoding of the allocation codes will only be done after the final completion of the statistical analyses.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Behbahan Islamic Azad University Ethics Committee

Street address
Shahid Bayani St., Amir Kabir Blvd.

City
Behbahan

Province
Khouzestan

Postal code
6361713198

Approval date
2026-07-21, 1405/04/30

Ethics committee reference number
IR.IAU.BEHBAHAN.REC.1405.183

Health conditions studied

1

Description of health condition studied
Anxiety problems of students in education

ICD-10 code
F41

ICD-10 code description
Other anxiety disorders

Primary outcomes

1

Description
Stress

Timepoint
before performing the intervention and two weeks after completion of the intervention

Method of measurement

Stress of academic expectations Ang and Hwan 2006

2

Description
Anxiety
Timepoint
before performing the intervention and two weeks after completion of the intervention
Method of measurement
Friedman and Jacob 1997 Test Anxiety Questionnaire

3

Description
Problem-solving skills
Timepoint
before performing the intervention and two weeks after completion of the intervention
Method of measurement
Heppner Problem Solving Questionnaire, 1982

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Math lesson training sessions using artificial intelligence-based tools, based on the Rezaei educational package (1403), will be implemented in 8 90-minute sessions (one session per week) for students in the intervention group in groups. This training is designed to reduce students' stress and anxiety when facing math lessons and improve their learning skills, problem-solving, and academic performance. Artificial intelligence-based training is an interactive and personalized approach that facilitates the math learning process by providing explanations appropriate to the students' learning level, generating various examples and exercises, immediate feedback, identifying errors, and providing step-by-step guidance in solving problems. This approach helps students to gain a better understanding of concepts and solve problems with more confidence by receiving appropriate educational support and gradual practice, instead of experiencing confusion, avoidance, and anxiety when facing math problems. This intervention has main educational themes that lead to reducing the psychological stress caused by mathematics lessons and increasing students' mathematical skills; these themes include: familiarization with the educational application and responsible use of artificial intelligence tools, initial assessment of learning level and identification of weaknesses, interactive teaching of selected mathematical concepts, providing exercises tailored to each student's ability, teaching problem-solving steps, receiving immediate feedback and correcting common errors, practicing diverse and practical problems, strengthening logical thinking and self-confidence in solving problems, and finally reviewing, consolidating, and summarizing what has been learned. The main emphasis of this program is on transforming mathematical learning from an anxious and difficult experience to a gradual, understandable, participatory process that is tailored to the educational needs of students.
Category
Behavior

2

Description
Control group: They will not receive any intervention or treatment and will receive education in the traditional way.
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Efaf Girls' High School
Full name of responsible person
Zeenat Davoudi
Street address
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Islamic Azad University
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bsalehi@iau.ac.ir
Grant name

Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Islamic Azad University
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Zinat Davoodi
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available
Justification/reason for indecision/not sharing IPD
Participant data is completely confidential and I do not intend to publish it.
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan
No - There is not a plan to make this available
Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available
Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
No - There is not a plan to make this available