Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Comparison of the effectiveness of digital flashcards and lecture-based teaching on learning and retention among dental students in periodontitis diagnosis

Protocol summary

Study aim

To determine and compare the effectiveness of digital flashcard teaching method versus lecture-based method on initial learning and one-month long-term retention among dental students in periodontitis diagnosis

Design

A randomized controlled clinical trial with a parallel design (two groups, random allocation), unblinded, conducted as a comparative study, with a sample size of 50 (25 per group)

Settings and conduct

This study is a parallel randomized controlled clinical trial (with two parallel groups: the digital flashcard intervention group and the traditional lecture control group) conducted to compare the effectiveness of two educational methods in the Department of Periodontics, Faculty of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, on 50 dental students (25 per group). The educational intervention is carried out over 3 days, and learning is evaluated immediately and one month after the intervention. This study is conducted as an unblinded trial.

Participants/Inclusion and exclusion criteria

The study is conducted on 50 dental students passing the Periodontics (1) course; Inclusion criteria include informed readiness, willingness, and sufficient motivation; Exclusion criteria comprise prior experience with digital flashcards to prevent prior exposure bias and using auxiliary study methods other than routine handouts and PowerPoint slides

Intervention groups

The intervention consists of two groups: the digital flashcard group receiving 20 interactive flashcards over 3 days (15 minutes daily), and the control group (traditional lecture) receiving a 45-minute lecture with PowerPoint

Main outcome variables

Learning score immediately after education; Retention score one month after education; Students' satisfaction level with the educational method

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20151013024509N6**
Registration date: **2026-10-31, 1405/08/09**
Registration timing: **registered_while_recruiting**

Last update: **2026-10-31, 1405/08/09**
Update count: **0**

Registration date

2026-10-31, 1405/08/09

Registrant information

Name

Fahimeh Rashidi Maybodi

Name of organization / entity

Shahid Sadoughi University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 912 519 6227

Email address

f-rashidi63@ssu.ac.ir

Recruitment status

recruiting

Funding source

Expected recruitment start date

2026-10-17, 1405/07/25

Expected recruitment end date

2026-12-09, 1405/09/18

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the effectiveness of digital flashcards and lecture-based teaching on learning and retention among dental students in periodontitis diagnosis

Public title

Comparison of digital flashcard and lecture teaching on dental students learning

Purpose

Education/Guidance

Inclusion/Exclusion criteria

Inclusion criteria:

Expressing readiness and willingness for active participation in the educational process Having sufficient motivation to participate in the study Being enrolled as a general dentistry student and currently passing the Periodontics (1) course

Exclusion criteria:

Having prior experience of using digital programs or flashcards to prevent prior exposure bias Using an auxiliary study method other than standard lecture handouts and PowerPoint slides as a routine method

Age

No age limit

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **50**

Randomization (investigator's opinion)

Randomized

Randomization description

Students are allocated in a 1:1 ratio into two groups of 25 participants each (the digital flashcard intervention group and the traditional lecture control group) using block randomization. To control for confounding variables, baseline characteristics including age, gender, overall GPA, and admission quota type are matched between the two groups.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

•Ethics committee of shahid sadooghi Yazd University of Medical Sciences

Street address

imam reza bulvar,School of Dentistry, University of Medical Sciences, Yazd

City

Yazd

Province

Yazd

Postal code

894815667

Approval date

2026-04-18, 1405/01/29

Ethics committee reference number

IR.SSU.DENTISTRY.REC.1405.013

Health conditions studied

1

Description of health condition studied

Periodontitis (Educational Diagnosis of Periodontal Diseases)

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Initial learning score immediately after education in periodontitis diagnosis

Timepoint

Immediately after the educational interventions

Method of measurement

A standard 10-item multiple-choice questionnaire (MCQ) designed by an expert panel, scored from 0 to 10

2

Description

One-month long-term retention score in periodontitis diagnosis

Timepoint

Four weeks (one month) after the completion of the educational intervention

Method of measurement

Repetition of the same standard 10-item multiple-choice questionnaire (MCQ), scored from 0 to 10

Secondary outcomes

1

Description
Satisfaction level of dental students with the applied teaching method
Timepoint
After the completion of the educational intervention and the initial learning test؛
Method of measurement
A 5-item evaluation survey questionnaire based on a 5-point Likert scale (ranging from 1: strongly disagree to 5: strongly agree)

Intervention groups

1

Description
Intervention group: Receiving a software containing 20 interactive flashcards on periodontitis diagnosis, reviewed for 15 minutes daily over 3 days (total 45 minutes).
Category
Behavior

2

Description
Control group: Traditional lecture-based teaching on periodontitis diagnosis through a 45-minute lecture with PowerPoint slides and no supplementary digital content.
Category
Behavior

Recruitment centers

1

Recruitment center
Name of recruitment center
periodontology department , yazd dental school
Full name of responsible person
Dr. Fahimeh Rashidi Meybodi
Street address
imam reza bulvar,School of Dentistry, University of Medical Sciences, Yazd
City
Yazd
Province
Yazd
Postal code
894815667
Phone
+98 35 3625 5880
Email
f-rashidi63@ssu.ac.ir
Web page address

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Yazd University of Medical Sciences
Full name of responsible person
Mehran Karimi
Street address
Shahid bahonar square
City
Yazd
Province
Yazd
Postal code
8916844933
Phone
+98 35 3725 8413
Email
mehrankarimi@ssu.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Yazd University of Medical Sciences
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
Yazd University of Medical Sciences
Full name of responsible person
Amirhossein Ghaemi Bafghi
Position
Student
Latest degree
A Level or less
Other areas of specialty/work
Dentistry
Street address
imam reza bulvar,School of Dentistry, University of Medical Sciences, Yazd
City
Yazd
Province
Yazd
Postal code
894815667
Phone
+98 35 3625 5881
Email

ah.ghaemi2@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Yazd University of Medical Sciences

Full name of responsible person
Dr. Fahimeh Rashidi Meybodi

Position
Associate professor

Latest degree
Specialist

Other areas of specialty/work
Dentistry

Street address
imam reza bulvar,School of Dentistry, University of Medical Sciences, Yazd

City
Yazd

Province
Yazd

Postal code
894815667

Phone
+98 35 3625 5880

Email
f-rashidi63@ssu.ac.ir

Person responsible for updating data

Contact

Name of organization / entity
Yazd University of Medical Sciences

Full name of responsible person
Amirhossein Ghaemi Bafghi

Position
Student

Latest degree
A Level or less

Other areas of specialty/work
Dentistry

Street address
imam reza bulvar,School of Dentistry, University of Medical Sciences, Yazd

City
Yazd

Province
Yazd

Postal code
894815667

Phone
+98 35 3625 5881

Email
ah.ghaemi2@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan
Undecided - It is not yet known if there will be 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
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available