

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

23 Feb 2026

### Comparison of the Effect of an Interactive vs Non-Interactive Educational Mobile Application on Nursing Students' Knowledge, Self-Efficacy, and Skills in Weaning, Extubation, and Re-intubation techniques for Mechanically Ventilated Patients

#### Protocol summary

##### Study aim

The comparison of interactive vs non-interactive mobile application on the knowledge, self-efficacy and skills of nursing students regarding weaning techniques, extubation and re-intubation of patients under mechanical ventilation.

##### Design

The present research is a semi-experimental study conducted on 70 nursing students of Mashhad University of Medical Sciences (semester seven, entries of Mehr and Bahman of the year 1399). The research sample is randomly selected from all students (about 120 people). For creating a random list, the Stata software will be used, using block randomization.

##### Settings and conduct

The study will be conducted on the students of the 7th semester of Mashhad Nursing and Midwifery College. They will be randomly divided into two control and intervention groups to use interactive and non-interactive applications.

##### Participants/Inclusion and exclusion criteria

Inclusion criteria: Students who voluntarily wish to participate in the study. Having an educational mobile phone is also one of the inclusion criteria. They should not have prior experience using the related educational applications (weaning, extubation, and reintubation).

##### Intervention groups

The intervention group, consisting of educational content WENING, EXTOBATION, and ENTUBASION, receives content through an interactive application and responds to questions. If the answers are correct or incorrect, they receive a brief explanation. The control group also receives educational content through a non-interactive application and answers questions. In the case of a correct or incorrect response, they receive an appropriate emoji.

#### Main outcome variables

knowledge, skill and self-efficacy

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20231001059571N1**

Registration date: **2023-11-27, 1402/09/06**

Registration timing: **prospective**

Last update: **2023-11-27, 1402/09/06**

Update count: **0**

##### Registration date

2023-11-27, 1402/09/06

##### Registrant information

##### Name

Alireza Samimi Sarangi

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 51 3876 2354

##### Email address

samimisa2@mums.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2023-12-21, 1402/09/30

##### Expected recruitment end date

2024-05-19, 1403/02/30

##### Actual recruitment start date

empty  
**Actual recruitment end date**  
empty  
**Trial completion date**  
empty

**Scientific title**  
Comparison of the Effect of an Interactive vs Non-Interactive Educational Mobile Application on Nursing Students' Knowledge, Self-Efficacy, and Skills in Weaning, Extubation, and Re-intubation techniques for Mechanically Ventilated Patients

**Public title**  
Comparison of the Effect of an Interactive vs Non-Interactive Educational Mobile Application on Nursing Students' Knowledge, Self-Efficacy, and Skills in Weaning, Extubation, and Re-intubation techniques for Mechanically Ventilated Patients

**Purpose**  
Education/Guidance

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Students who voluntarily want to participate in research  
Students who do not have previous experience using the relevant educational applications (weaning, extubation and reintubation) Having an educational mobile phone is also one of the conditions for participating in the research

**Exclusion criteria:**

**Age**  
No age limit

**Gender**  
Both

**Phase**  
N/A

**Groups that have been masked**  
*No information*

**Sample size**  
Target sample size: **70**

**Randomization (investigator's opinion)**  
Randomized

**Randomization description**  
Random allocation of individuals to two groups, intervention and control, will be performed using STATA software (version 17) by a statistical expert. This software provides a random sequence of 70 letters, A and B, in a 1:1 ratio (35 A's and 35 B's). In the subsequent phase, 35 A cards and 35 B cards will be prepared in line with the sequence generated by the software, placed in sealed dark envelopes, and numbered from 1 to 70. As each participant arrives, based on the number assigned to them, the corresponding envelope will be opened, determining the volunteer's group.

**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 Mashhad University of Medical Sciences

**Street address**

Daneshgah Ave, Ghoreishi Building

**City**

Mashhad

**Province**

Razavi Khorasan

**Postal code**

9178154653

**Approval date**

2023-10-18, 1402/07/26

**Ethics committee reference number**

IR.MUMS.NURSE.REC.1402.084

**Health conditions studied**

1

**Description of health condition studied**

موضوع مطالعه بیماری نمیشد

**ICD-10 code**

**ICD-10 code description**

**Primary outcomes**

1

**Description**

knowledge

**Timepoint**

Before intervention and seven days after using the application

**Method of measurement**

MCQ

2

**Description**

self efficacy

**Timepoint**

Before intervention and seven days after using the application

**Method of measurement**

self efficacy questionnaire

3

**Description**

skill

### Timepoint

Before intervention, seven days after using the application, and during the ICU internship (encountering real patients under mechanical ventilation)."

### Method of measurement

OSCE exam before and after the intervention, and the logbook of ICU internship to assess skills during the internship

### Secondary outcomes

empty

### Intervention groups

#### 1

##### Description

Intervention group: In the interactive application group, After registration and receiving their username and password, students can log into the application and access educational content related to weaning, extubation, and reintubation. They then answer questions on the same topic, which are presented as short videos of patients from the intensive care unit, within a specified time frame. In case of choosing the wrong answer, in addition to displaying a message about the wrong choice, without referring to the correct option, a short explanation will be given about why the chosen answer is wrong. But if the correct option is selected, in addition to encouraging the student, a brief explanation is given to emphasize the correct option and confirm the student's learning, and a point is also considered for him. If they need more information, students can contact the research team by writing a comment. If 60% of the questions of each stage are answered correctly, the student can enter the next stage. Also, students can compare their scores with other students and see their rank in the group at any time. This game is available to students for a week and during the week, a reminder message is sent to them to use the application. According to the counter embedded in the application, the number of times and duration of participation can be determined for each person, and if the duration of the student's participation in the game is less than the defined amount (one third of the required time), he/she will be removed from the game. The study was deleted.

##### Category

Other

#### 2

##### Description

Control group: In the non-interactive application group, After registration and receiving their username and password, students can log into the application and access educational content related to weaning, extubation, and reintubation. They then answer questions on the same topic, which are presented as short videos of patients from the intensive care unit, within a specified time frame. In case of choosing the wrong or correct answer, they can see different emojis. If 60% of the questions of each stage are answered

correctly, the student can enter the next stage. This game is available to students for a week and during the week, a reminder message is sent to them to use the application. According to the counter embedded in the application, the number of times and duration of participation can be determined for each person, and if the duration of the student's participation in the game is less than the defined amount (one third of the required time), he/she will be removed from the game. The study was deleted.

##### Category

Other

### Recruitment centers

#### 1

##### Recruitment center

###### Name of recruitment center

Imam Reza Hospital

###### Full name of responsible person

Alireza Samimi Sarangi

###### Street address

Imam Reza Squ.

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###### Province

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###### Email

samimisa2@mums.ac.ir

### Sponsors / Funding sources

#### 1

##### Sponsor

###### Name of organization / entity

Mashhad University of Medical Sciences

###### Full name of responsible person

Mohsen Tafaghodi

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Ghoreishi Building, Daneshgah Street

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Tafaghodim@mums.ac.ir

##### Grant name

##### Grant code / Reference number

##### Is the source of funding the same sponsor organization/entity?

Yes

##### Title of funding source

Mashhad 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**  
Mashhad University of Medical Sciences  
**Full name of responsible person**  
Razie Froutan  
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Associate Professor  
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## Person responsible for scientific inquiries

### Contact

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## Person responsible for updating data

### Contact

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Alireza Samimi Sarangi  
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samimisa2@mums.ac.ir

## 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**  
There is no further information  
**Study Protocol**  
No - There is not a plan to make this available  
**Statistical Analysis Plan**  
No - There is not a plan to make this available  
**Informed Consent Form**  
No - There is not a plan to make this available  
**Clinical Study Report**  
No - There is not 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