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The impact of self-directed learning of cardiopulmonary resuscitation skills with interactive video

Submission date
26/06/2025

Recruitment status
No longer recruiting

Registration date
26/06/2025

Overall study status
Completed

Last Edited
27/06/2025

Condition category
Other

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

Plain English summary of protocol

Background and study aims
Cardiopulmonary resuscitation (CPR) is a vital life-saving procedure used when someone's heart stops beating. Proper CPR training for healthcare students is essential to improve patient survival in emergencies. This study aims to find out whether using an interactive video-based self-learning method before practical training helps nursing students learn and retain CPR skills better than the traditional instructor-led seminar alone.

Who can participate?
Undergraduate nursing students enrolled at Universidad CEU San Pablo who are taking the CPR training course.

What does the study involve?
Participants will be randomly assigned to one of two groups. One group will receive the traditional instructor-led CPR seminar. The other group will first complete an interactive video-based self-learning module (called Simulation Zone 0) before attending the seminar. The students' CPR skills will be tested right after training, and then again at 3 and 6 months, to see how well they remember and apply the skills.

What are the possible benefits and risks of participating?
Participants may benefit by improving their CPR skills and confidence through the innovative video learning method. There are no known risks associated with participating in the study. The study does not involve any treatment, only training and assessment.

Where is the study run from?
The study is run from the Universidad CEU San Pablo, Spain.

When is the study starting and how long is it expected to run for?
September 2023 to September 2024

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
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Contact information

Type(s)
Public, Scientific, Principal Investigator

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
Nil known

Study information

Scientific Title
Impact of self-directed learning of cardiopulmonary resuscitation skills with interactive video: pilot randomized clinical trial

Acronym
CPR-VideoStudy

Study objectives

This study hypothesises that the application of zone 0 of the SimZones significantly improves the acquisition of CPR skills in nursing students, compared to those who receive training through hands-on seminars with the instructor's instructions. This hands-on learning seminar is classified as Zone 1 according to Roussin's SimZones. Zone 0 allows students to practice autonomously and receive immediate feedback through virtual platforms, which can enhance their learning and knowledge retention. Therefore, Zone 0 of Roussin's SimZones is particularly relevant for this study.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 26/09/2023, Comité de Ética de Investigación de la Universidad San Pablo-CEU (Urbanización Montepríncipe, Boadilla del Monte, 28668, Spain; +34 91 372 47 00; investigacion@ceu.es), ref: 768-23-89

Study design
Randomized controlled pilot study

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Training facility/simulation, University/medical school/dental school

Study type(s)
Efficacy

Participant information sheet
See study outputs table

Health condition(s) or problem(s) studied
Cardiopulmonary resuscitation (CPR) training and competency acquisition in nursing students.

Interventions
This randomized pilot clinical trial was conducted to evaluate the effectiveness of Zone 0 for the acquisition of basic CPR skills using IV and an ad hoc video. The study started in December 2023 and ended in September 2024. Peyton's methodology has been followed, which is composed of four main steps: demonstration, deconstruction, comprehension and performance. For randomization, the free application “Graphpad” available at www.graphpad.com was used.

Participants will be randomly assigned to one of two groups. One group will receive the traditional instructor-led CPR seminar. The experimental group will first complete an interactive video-based self-learning module (called Simulation Zone 0) before attending the seminar. This session consisted of following the learning sequence, following the Peyton steps methodology. Through an interactive video with immediate feedback and the online application stornaway.io they performed the steps in the acquisition of CPR skills. The sequence performed by the students was:

1. Viewing of a video performing ad hoc of the basic CPR sequence without interruptions.
2. They watched the same video in which cuts are made at key points of the CPR skills. In these cuts, the technique being performed and its importance are explained.
3. After viewing the video with pauses, the student watches the same video again and has to decide what to do at each point. The video gives two or three options and the student has to choose the option he/she consider correct. In case of selecting the wrong option, the video gives feedback and explains the correct option; on the contrary, if the student selects the correct option, the video continues with the next scene. The student can watch the video as many times as he/she wants.
4. Finally, through the Laerdal Little Anne® task trainer with QualityCPR® system, students perform the complete CPR sequence with autofeedback of the compressions the performed before the competency assessment.
5. Upon completion of the competency acquisition steps, the student performed the CPR competency assessment, supervised by an instructor, who did not give any feedback to the student before or after the assessment.

Intervention Type
Behavioural

Primary outcome measure
Acquisition and retention of cardiopulmonary resuscitation (CPR) competencies are measured using a standardized practical skills checklist during simulated CPR scenarios, scored as a percentage of correct actions performed, immediately after training, and at 3 months and 6 months post-training to evaluate retention over time

Secondary outcome measures
1. Student satisfaction with the training method, measured using a validated Likert-scale questionnaire administered immediately after the training session
2. Self-reported confidence in performing CPR, measured using a standardized confidence survey at baseline (before training), immediately post-training, and at 3 and 6 months follow-up
3. Knowledge retention related to CPR protocols, measured using a multiple-choice questionnaire at baseline, immediately post-training, and at 3 and 6 months follow-up
4. Quality of CPR performance, measured through automatic feedback from simulators quantifying parameters such as compression rate, compression depth, and ventilation time, assessed immediately post-training and at 3 and 6 months follow-up

Overall study start date
26/09/2023

Completion date
30/09/2024

Eligibility

Key inclusion criteria
1. Undergraduate nursing students
2. Enrolled in the simulation subject
3. Provided informed consent

Participant type(s)
Learner/student

Age group
Adult

Lower age limit
18 Years

Upper age limit
44 Years

Sex
Both

Target number of participants
30

Total final enrolment
36

Key exclusion criteria
1. Students with prior CPR certification within the past 12 months
2. Refusal to participate

Date of first enrolment
01/11/2023

Date of final enrolment
15/11/2023

Locations

Countries of recruitment
Spain

Study participating centre
CEU San Pablo University
Urbanización Montepríncipe
Boadilla del Monte
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28668

Sponsor information

Organisation
Universidad San Pablo CEU

Sponsor details
Urbanización Montepríncipe
Madrid
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28668

Sponsor type
University/education

Website
https://www.uspceu.com

ROR
https://ror.org/00tvate34

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Publication and dissemination plan
The results of this study will be submitted for publication in peer-reviewed scientific journals related to nursing education and clinical simulation. Additionally, findings will be presented at national and international conferences in the fields of nursing, healthcare education, and simulation training. We also plan to share the outcomes with participating institutions and stakeholders through workshops and internal reports. Dissemination through social media and university communication channels will be used to reach a broader audience, including nursing students and educators. The aim is to promote evidence-based improvements in CPR training methodologies.

Intention to publish date
01/07/2025

Individual participant data (IPD) sharing plan
No individual participant data will be shared beyond the research team due to confidentiality and privacy concerns.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet			26/06/2025	No	Yes