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Nurse training through virtual reality simulation of an operating room: assessing satisfaction and outcomes

Submission date
09/10/2023

Recruitment status
No longer recruiting

Registration date
23/10/2023

Overall study status
Completed

Last Edited
20/05/2024

Condition category
Other

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
In the pursuit of enabling nurses to apply acquired theoretical knowledge within a clinical context to narrow the theory-practice gap – recognizing that nursing is a practical discipline – innovative teaching methods must be embraced to ensure the accurate application of knowledge. Traditional teaching techniques do not always seamlessly translate into clinical practice due to the disparity between classroom learning and real clinical settings. An increasingly adopted approach involves the utilization of simulators, which replicate clinical environments. The benefits encompass a risk-free, interactive, and realistic learning environment for nurses; the provision of various adaptable clinical scenarios; the opportunity for experiential learning outside the clinical domain; fostering teamwork and communication through collaborative and supportive frameworks with multiple participants; the capacity to repeat scenarios, allowing for increased exposure and error correction; and the enhancement of technical and non-technical skills. Aligned with the aforementioned interests, a video-assisted thoracic surgery (VATS) simulator, facilitating nurses in performing surgical procedures within a virtual reality (VR) setting, has been developed by the Spanish company, Kauka. Consequently, the aim of this pilot study is to evaluate the use of created VR software as a potential tool for training operating room nurses to perform thoracic surgery procedures.

Who can participate?
Operating room nurses without prior thoracic surgery experience, irrespective of contract type or age.

What does the study involve?
The participants will assist in a thoracic surgery procedure (right upper lobectomy) in a VR-created operating room.

What are the possible benefits and risks of participating?
Participants will benefit by improving their knowledge of thoracic surgery and virtual reality. There are no risks expected.

Where is the study run from?
Donostia University Hospital (Spain)

When is the study starting and how long is it expected to run for?
October 2021 to December 2023

Who is funding the study?
Basque Health Service 22BU213 (Spain)

Who is the main contact?
Jon Zabaleta (Thoracic surgeon at Donostia University Hospital), jon.zabaletajimenez@osakidetza.eus

Contact information

Type(s)
Public, Scientific, Principal Investigator

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Mr Jon Zabaleta

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
JZJ-PIL-2021-01

Study information

Scientific Title
Nurse training through virtual reality simulation of an operating room: assessing satisfaction and outcomes

Acronym
RVSURG

Study objectives
Virtual reallity is a useful tool for operating room nurse formation

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 30/11/2021, Comité de Ética de la Investigación con Medicamentos Gipuzkoa (Paseo Dr Beguiristain s/n, Donostia, 20014, Spain; +34 943007000; iratxe.urretabarallobre@osakidetza.eus), ref: None provided

Study design
Open-label parallel-group randomized pilot study

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital, Internet/virtual

Study type(s)
Treatment

Participant information sheet
See trial outputs table

Health condition(s) or problem(s) studied
Improve skills of operating room nurses using virtual reality

Interventions
This is an open-label, parallel-group, randomized clinical trial. One group will receive basic formation followed by an assessment module. The experimental group will receive the same basic formation, followed by thoracic surgery training and an assessment module.

Operating Room Simulator: Participants are poised to begin surgery. The nurse stands on the right side of the patient (opposite the surgeon). For heightened immersion, users can observe surgery in progress by monitoring two room screens. This recording showcases the same surgery conducted at University Hospital Donostia (VATS-Right Upper Lobectomy). A continuous beeping sound simulates the patient's condition monitoring alarms. Correct tool handling triggers a cheerful sound, while incorrect execution prompts a program message reading "Incorrect Tool Selected." The program comprises two modules: Formation and Evaluation. Formation restricts interaction with the requested instrument, eliminating error possibilities. The tool is indicated by red arrows for precise location. In Evaluation, participants solely hear the instrument name called by the surgeon (as in real surgeries). Interaction with the software

requires touch controller usage, symbolized as virtual hands. Left and right controllers correspond to respective hands. The only permitted action in the simulator is grasping. Pressing the back button on a touch controller closes the hand, flexing all fingers. Close proximity to any instrument enables users to pick up objects upon button press, retaining them until release.

Intervention Type
Device

Pharmaceutical study type(s)
Not Applicable

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Operating Room Simulator

Primary outcome measure
Number of Completed Tasks (range 0-46), Individual Task Scores (20 for correct performance, 0 for incorrect), Time Spent in the Simulator (in minutes), and Overall Score (sum of task scores, max: 1000) measured at one timepoint using data collected in real-time by the virtual reality software

Secondary outcome measures
1. Simulator sickness and satisfaction measured using a Simulator Sickness Questionnaire (SSQ) and a satisfaction test at one timepoint just after the simulation
2. Demographic variables: age, gender, dominant hand (right-handed, left-handed, ambidextrous), and videogame usage measure using a direct question "Do you have experience playing video games?" [yes or no] at one timepoint before the simulation

Overall study start date
25/10/2021

Completion date
31/12/2023

Eligibility

Key inclusion criteria
Operating room nurses without prior thoracic surgery experience, irrespective of contract type or age.

Participant type(s)
Health professional

Age group
Adult

Lower age limit
22 Years

Upper age limit
65 Years

Sex
Both

Target number of participants
50

Key exclusion criteria
Previous participation in a thoracic surgery operating room within the 24 months preceding the study

Date of first enrolment
01/11/2023

Date of final enrolment
30/11/2023

Locations

Countries of recruitment
Spain

Study participating centre
Donostia University Hospital
Paseo Dr Beguiristain s/n
Donostia
Spain
20010

Sponsor information

Organisation
Osakidetza

Sponsor details
Basque health service (Servicio Vasco De Salud)
Paseo Dr Beguiristain, s/n
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Sponsor type
Hospital/treatment centre

Website
https://www.osakidetza.euskadi.eus/portada/

ROR
https://ror.org/02g7qcb42

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Basque Health Service

Results and Publications

Publication and dissemination plan
Planned publication in a high-impact peer-reviewed journal

Intention to publish date
01/06/2024

Individual participant data (IPD) sharing plan
The dataset generated during the current study will be available upon request from Jon Zabaleta, jon.zabaletajimenez@osakidetza.eus. The study will collect all data as an anonymized dataset and upon request, all raw data can be shared within 2-3 working days after the request.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	version 1.0	20/11/2021	11/10/2023	No	Yes
Protocol file	[Spanish] version 1.0	20/11/2021	18/10/2023	No	No
Results article		16/05/2024	20/05/2024	Yes	No