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Use of virtual reality to train dental professionals

Submission date	Recruitment status	[ ] Prospectively registered
03/02/2020	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
17/02/2020	Completed	[X] Results
Last Edited	**Condition category**	[ ] Individual participant data
28/10/2021	Oral Health	

Plain English summary of protocol

Background and study aims

In England, the population is ageing and people are retaining their teeth for longer. Dental professionals are increasingly treating patients with multiple illnesses. It is therefore important to improve dental professionals' communication during dental visits in order to help increase older people's compliance with preventive advice and routine dental attendance. Simulation technology could be an ideal way to train dental professionals' on appropriate practice and communication to these groups of patients. Virtual reality (VR) has improved clinical practice but it has not been used to simulate dental care, which is a unique experience. The aim of this study is to test the use and acceptability of a virtual reality training tool which mimics the visual, physical and auditory experience of an older person with complex needs (some associated with age) visiting a dentist and receiving oral health advice.

Who can participate?

Training dental professionals from the University of Portsmouth Dental Academy, and qualified dental professionals

What does the study involve?

Participants complete a questionnaire to test their level of confidence in providing preventive care and instruction to increasingly frail dental patients who may have cognitive and age-related challenges. The simulation uses VR goggles and runs for 5 minutes. It is carried out at the University of Portsmouth or where the participants work (potentially two NHS practice sites). After the simulation a questionnaire is used to evaluate the professionals' confidence again and different aspects of the tool such as its usefulness and acceptability and ways it can be adapted or improved.

What are the possible benefits and risks of participating?

The benefits would be additional knowledge delivered by the training. Risks of the study are minimal. They include the inconvenience of participation. The questionnaires and simulation will be related to participants' experiences of the VR simulation, this could lead to them feeling uncomfortable.

Where is the study run from?
1. William Beatty Building (UK)
2. Oxfordshire Priority Dental Service (UK)
3. Southampton NHS Treatment Centre (UK)

When is the study starting and how long is it expected to run for?
April 2018 to April 2020

Who is funding the study?
1. Oral and Dental Research Trust (UK)
2. Solent NHS Trust (UK)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Integrated Research Application System (IRAS)
253855

Central Portfolio Management System (CPMS)
40603

Study information

Scientific Title
The use of virtual reality as a training tool to improve preventive dental practice for increasingly frail dental patients: a pilot study with dental professionals

Study objectives
In England, the population is ageing and people are retaining their teeth for longer (Steele et al., 2012). Dental professionals are increasingly treating patients with multiple comorbidities. It is therefore important to improve dental professionals' communication during dental visits in order to help increase older people's compliance with preventive advice and routine dental attendance (Borreani et al., 2008, British Dental Association, 2003).

Simulation technology could be an ideal way to train dental professionals' on appropriate practice and communication to these groups of patients. Virtual reality (VR) has improved clinical practice (McGaghie et al., 2010), however, it has not been used to simulate dental care, which is a unique experience.

The aim of this study is to test the use and acceptability of a virtual reality training tool which mimics the visual, physical and auditory experience of an older person with complex needs (some associated with age) visiting a dentist and receiving oral health advice.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 18/01/2019, University of Portsmouth Science Faculty Ethics Committee (Science Faculty Office, University of Portsmouth, St Michael's Building, White Swan Road, Portsmouth, PO1 2DT, UK; Tel: +44 (0)23 9284 3379; Email: ethics-sci@port.ac.uk), REC ref: 18/NS/0138

Primary study design
Interventional

Study design
Non-randomised; Interventional; Design type: Prevention, Process of Care, Education or Self-Management

Study type(s)
Other

Health condition(s) or problem(s) studied
Training dental professionals

Interventions
Study design: This is a before and after study involving the testing of a simulation training intervention with a baseline questionnaire and a follow-up questionnaire after the simulation.

Simulation developmental: Researchers at the University of Portsmouth's Centre for Technology and Dental Academy will build and model the dental environment into a VR aperture. This will be built into a portable device which can be worn to experience the VR environment by training students.

Study conduct: A cohort of UPDA students and qualified dental professionals (n= 50) who have consented to take part will experience three stages of the study.

Stage a) Baseline questionnaire. This semi-structured questionnaire will test the level of confidence in providing preventive care and instructions to and increasingly frail patients who may have cognitive and age-related challenges.

Stage b) Experimental/Simulation: The participants will experience the simulation environment using VR goggles. This will either be carried out in the Dental Academy or in selected where the participants work (NHS practice sites)

Stage c) Post simulation questionnaire: After this simulation, participants will be given and will be asked to undertake the follow-up questionnaire which will evaluate their confidence again and aspects of the tool e.g its usefulness and acceptability, ways it can be adapted/improved and ascertain their confidence in delivering preventive advice to this target group.

Intervention Type
Device

Phase
Not Applicable

Primary outcome(s)
1. Confidence levels in providing care to an increasingly frail patient measured using a questionnaire pre and post simulation (simulation is 5 min)
2. Views on acceptability and improvements of the tool measured using a questionnaire at the end of the study

Key secondary outcome(s)
There are no secondary outcome measures

Completion date
30/04/2020

Eligibility

Key inclusion criteria
Dental professionals training at the University of Portsmouth Dental Academy and qualified dental professionals working in NHS community dental services settings who provide dental care to patients in the full age spectrum

Participant type(s)
Health professional

Healthy volunteers allowed
No

Age group
Adult

Sex
All

Total final enrolment
39

Key exclusion criteria
Dental professionals training at the University of Portsmouth Dental Academy and qualified dental professionals working in NHS community dental services settings who do not provide dental care to patients in the full age spectrum

Date of first enrolment
21/01/2019

Date of final enrolment
01/08/2019

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
William Beatty Building
Hampshire Terrace
Portsmouth
United Kingdom
PO1 2QG

Study participating centre
Oxfordshire Priority Dental Service
Astral House
Granville Way
Bicester
United Kingdom
OX26 4JT

Study participating centre
Southampton NHS Treatment Centre
Care UK
Level D R.s.h Hospital
Brintons Terrace
Southampton

United Kingdom
SO14 0YG

Sponsor information

Organisation
University of Portsmouth

ROR
https://ror.org/03ykbk197

Funder(s)

Funder type
Government

Funder Name
Oral and Dental Research Trust

Funder Name
Solent NHS Trust

Alternative Name(s)
Solent NHS

Funding Body Type
Government organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Abstract results	Presented at 2020 IADR/AADR/CADR meeting	01/01/2020	28/10/2021	No	No