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Evaluation of GRADIOR, a neuropsychological rehabilitation programme for people with mild dementia and mild cognitive impairment

Submission date
02/06/2017

Recruitment status
No longer recruiting

Registration date
12/06/2017

Overall study status
Completed

Last Edited
11/07/2023

Condition category
Mental and Behavioural Disorders

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

Plain English summary of protocol

Background and study aims
Mild cognitive impairment (MCI) is a slight but noticeable and measurable decline in cognitive abilities, including memory and thinking skills. A person with MCI is at an increased risk of developing dementia. The symptoms of dementia include memory loss and difficulties with thinking, problem-solving or language. In the last few years the incidence of chronic illnesses such as dementia has considerably increased. It is estimated that 10 to 20% of people over the age of 65 living in Spain are affected by MCI and that 1.75% of the Spanish population has dementia. This high incidence increases costs of care and the need for effective treatments. Psychosocial interventions are ways to support people to overcome challenges and maintain good mental health, and do not involve the use of medication. Psychosocial interventions have been found to slow down deterioration in people with dementia. For example, cognitive rehabilitation is an individualised approach that postpones cognitive decline in dementia. The aim of this study is to assess the effectiveness and usability of a cognitive rehabilitation programme called GRADIOR in patients with dementia or MCI.

Who can participate?
Patients aged over 60 with dementia or MCI

What does the study involve?
Participants are randomly allocated to one of four groups to receive either cognitive rehabilitation (GRADIOR programme), psychosocial stimulation (EhcoButler programme), cognitive rehabilitation combined with psychosocial stimulation (GRADIOR+EhcoButler), or treatment as usual. The GRADIOR programme consists of exercises covering attention, memory, orientation, perception, calculus, executive functions and reasoning. EhcoButler is an online platform which aims to promote physical and mental health, social participation, quality of life and personal well-being. All groups receive treatment for a period of one year with one year of follow-up. All participants' cognitive performance is assessed at the start of the study, after 4 and 12 months of treatment, and at 16 and 24 months during the follow-up. Quality of life, mood, activities of daily living and quality of patient-carer relationship are also assessed.

What are the possible benefits and risks of participating?
GRADIOR may improve cognition in people with dementia and MCI. Participants in the treatment as usual group may benefit from the regular monitoring and testing. There are not any known side effects or risks for the participants related to the use of GRADIOR or EhcoButler.

Where is the study run from?
1. INTRAS Foundation Memory Clinic (Spain)
2. Zamora Provincial Hospital (Spain)

When is the study starting and how long is it expected to run for?
May 2017 to May 2020

Who is funding the study?
1. INTRAS Foundation (Spain)
2. INDUCT - Interdisciplinary Network for Dementia Using Current Technology

Who is the main contact?
1. Prof. Manuel Franco-Martín
2. Miss Martina Vanova
investigacion5@intras.es

Contact information

Type(s)
Scientific

Contact name
Prof Manuel Franco-Martín

ORCID ID
http://orcid.org/0000-0002-3639-2523

Contact details
Av. Hernán Cortes, 40
Zamora
Spain
49024

Type(s)
Scientific

Contact name
Miss Martina Vanova

Contact details
Ctra de la Hiniesta 137
Zamora
Spain
49024
+34 (0)980 516 427
investigacion5@intras.es

Additional identifiers

EudraCT/CTIS number
2017-001843-11

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
INT-GRA01

Study information

Scientific Title
Evaluation of GRADIOR, a neuropsychological rehabilitation programme for people with mild dementia and mild cognitive impairment - a multicentre single-blinded randomised controlled trial

Acronym
GRADIOR RCT

Study objectives
Usability study and focus group hypothesis:
1. GRADIOR will be easy to use and intuitive for people with dementia (PwD) and mild cognitive impairment (MCI) and the user's experience will be rated as positive

Main trial hypotheses:
1. GRADIOR will maintain or improve the cognition of PwD and MCI at 4 and 12 months after the start of the treatment
2. GRADIOR will have no effect on quality of life, activities of daily living and mood state at 4 and 12 months after the start of the treatment
3. GRADIOR will decrease carer's burden, anxiety and depression symptoms at 4 and 12 months of the treatment and at 16 and 24 months in the follow-up
4. GRADIOR will improve the patient-carer relationship at 4 and 12 months of the treatment and at 16 and 24 months in the follow-up

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 30/08/2018, Ethics Committee for Drug Research, Zamora Health Area (Hospital Provincial, C/Hernan Cortes n°40-49021, Zamora, Spain; +34 (0)980548572; psq. hvcn@saludcastillayleon.es), ref: 387-E.C

Study design
Multicentre single-blind randomised controlled trial

Primary study design

Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Community

Study type(s)
Treatment

Participant information sheet
See additional files

Health condition(s) or problem(s) studied
Dementia, mild cognitive impairment

Interventions
Eligible participants will undergo a preliminary baseline testing of all outcome measures. Subsequently, participants will be randomised in equal proportion between 4 groups receiving cognitive rehabilitation (GRADIOR programme), psychosocial stimulation (EhcoButler programme), cognitive rehabilitation combined with psychosocial stimulation (GRADIOR+EhcoButler), and a treatment as usual group. Participants will be randomised using a computer-generated random number sequence. The Epidat 4.1 program will be used to generate this sequence. The allocation will be carried out by an independent researcher who will be unaware of the characteristics of the study. Participants will be allocated to each group using simple randomisation. Simple randomisation will allocate every participant randomly in a group independently of their characteristics (age, sex, education, area etc).

GRADIOR
The programme consists of exercises divided into 7 cognitive modalities (attention, memory, orientation, perception, calculus, executive functions and reasoning). Every cognitive modality contains various submodalities (e.g. sustained auditive attention, short-term iconic memory etc.) and every submodality can have from 2 to 11 levels of difficulty. Altogether, GRADIOR contains 45 different types of exercises in which stimuli change after every session to avoid boredom and increase unpredictability and maximise novelty effect. Overall GRADIOR consists of more than 45,000 different stimuli.
In a standard treatment, the duration of every exercise is approximately 1 minute and the duration of each treatment session is around 30 minutes. Every participant finishes the 30-minute session with a particular number of finished exercises. The next treatment session starts and continues with unfinished exercises from the previous session. This avoids repetition of the same exercise in one treatment session.
Every treatment session includes a list with all exercises of GRADIOR. At the beginning of the treatment all participants will be assigned the same exercises although, the level of difficulty for every exercise will be set up individually for every participant, depending on their performance during the baseline treatment session. The treatment will be adjusted for every participant at 4 moths after the beginning of the intervention.
The frequency of treatment sessions will be set at 3-4 times per week for 30 minutes per session.

EhcoButler
EhcoButler is an e-health platform available via the internet which aims to promote physical and

mental health, social participation, quality of life and personal well-being. EhcoButler is aimed to be used by people with MCI or mild dementia as well as their carers.
Before the start of the treatment participants will be instructed how to use the platform and they will be given user details. They will be also instructed about the possibilities which the platform offers. The use of the platform should be for 5 hours per week or more. The time schedule of usage of the platform will depend on each participant and their needs and availability individually.
To assure a proper usage of the platform at least once a week the study coordinator will ask every participant in the group to write about a chosen topic in the part called “Book of life”, as EhcoButler does not record any data about the usage of the platform.

Combined treatment - GRADIOR+EhcoButler
Participants in this group will attend cognitive rehabilitation sessions with the GRADIOR programme twice a week and psychosocial stimulation sessions with EhcoButler in duration of 3 hours per week.

Treatment as usual (TAU)
The care in this group will be depending on each participant’s needs, including medication, social activities etc, which will not be influenced by study coordinators or other staff members included in the study. TAU is usually region specific what influences person’s access to services and treatment availability, therefore the outcomes of care for these participants may vary. Participants in this group will be put on a waiting list for the cognitive rehabilitation treatment with GRADIOR and will be offered this treatment once the main trial is finished. TAU is usually also available to participants in the active treatment groups.

All groups will be involved in the corresponding intervention group for a period of one year with one year of follow-up.

Intervention Type
Behavioural

Primary outcome measure
Cognitive performance, measured using Spanish versions of the following tests at baseline, 4 months and 12 months:
1. Mini-Mental State Examination (MMSE)
2. Alzheimer's Disease Assessment Scale - Cognitive Subscale (ADAS-Cog)
3. Clock Drawing Test (CDT)
4. WAIS III – Coding digit symbol
5. Calculus and Digit Span subtests
6. Rivermead pattern recognition test
7. Trail making test versions A and B (TMT)
8. Cambridge Cognitive Examination (CAMCog) – matrices subtest
9. Semantic and phonologic verbal fluency tests

Secondary outcome measures
Assessed at baseline, at 4 and 12 months of the treatment and at 16 and 24 months in the follow-up:
1. Quality of life, assessed by the EuroQol EQ5D-5L
2. Depression symptoms, assessed by the Geriatric Depression Scale (GDS)
3. Activities of daily living and demographic information, health and use of services, assessed by the InterRAI-HC

4. Experience with technology, assessed by the Everyday Technology Use Questionnaire (ETUQ)
5. Quality of relationship with carer, assessed by the Quality of carer-patient relationship (QCPR)

Carers participating in the trial complete the following measures at the same timepoints as above:
1. Caregiver burden, assessed by the Zarit test
2. Depression symptoms, assessed by the Beck Depression Inventory II (BDI-II)
3. Anxiety symptoms, assessed by the State-Trait Anxiety Inventory (STAI)

Overall study start date
01/05/2017

Completion date
01/05/2020

Eligibility

Key inclusion criteria
1. Males and females aged over 60
2. Formal diagnosis of dementia (meeting the DSM IV/TR5 criteria, Clinical Dementia Rating between 1 and 2, Geriatric Depression Scale score lower than 5) or MCI (meeting the Petersen criteria, Clinical Dementia Rating less than 0.5, Geriatric Depression Scale score lower than 5)
3. Capability making decisions
4. Having a reference caregiver
5. Being able to read and write in Spanish language

Participant type(s)
Patient

Age group
Senior

Sex
Both

Target number of participants
400

Total final enrolment
89

Key exclusion criteria
1. Mayor physical illness or disability which could affect participation (hearing loss, blindness, etc)
2. Neurological illness (Huntington's disease, cerebro-vascular stroke, Parkinson's disease, dementia with Lewy body)
3. Psychiatric diagnosis (depression, psychosis, bipolar disorder)
4. History of substance dependence (alcoholism or alcohol related dementia)
5. Taking antipsychotic medication

Date of first enrolment

01/09/2017

Date of final enrolment
01/12/2017

Locations

Countries of recruitment
Spain

Study participating centre
INTRAS Foundation Memory Clinic
Spain
49024 Zamora

Study participating centre
Zamora Provincial Hospital
Department of Psychogeriatry
Zamora
Spain
49024

Sponsor information

Organisation
INTRAS Foundation

Sponsor details
Ctra de la Hiniesta 137
Zamora
Spain
49024

Sponsor type
Charity

ROR
https://ror.org/00rwgk448

Funder(s)

Funder type
Charity

Funder Name
INTRAS Foundation

Funder Name
INDUCT - Interdisciplinary Network for Dementia Using Current Technology

Results and Publications

Publication and dissemination plan
1. The protocol and results will be published in specialised peer-reviewed journals
2. Presentation at events organised by project INDUCT (Interdisciplinary Network for Dementia Using Current Technology). Financed by H2020 Marie Skłodowska Actions Curie – Innovative Training Network, 2015 (grant agreement number 676265)
3. Presentation at conferences and meetings organised by the INTERDEM network which is a part of the project PRIDE (Promoting Independence in Dementia), funded by NIHR/ ESRC (Ref ES /L001802/1WP5)

Intention to publish date
30/12/2021

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study is not expected to be made available. The data will be safely held and managed in concordance with Spanish law “Ley Orgánica 15/1999” from 13th December related to personal data protection. Original test sheets will be held in a locked closet with a restricted access at the treatment site and computer database will be password protected stored on a central server with restricted access.

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		08/06/2017	12/06/2017	No	Yes
Results article		03/02/2022	07/02/2022	Yes	No
Protocol article		12/02/2018	11/07/2023	Yes	No
Results article	determinants of adherence in the experimental group	19/03/2023	11/07/2023	Yes	No