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Vitamin D for people at risk of dementia

Submission date	Recruitment status	[X] Prospectively registered
05/07/2018	No longer recruiting	[X] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
23/07/2018	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
15/01/2025	Mental and Behavioural Disorders	

Plain English summary of protocol

Background and study aims

As we get older our brains also begin to age, resulting in a 'slowing down' of abilities such as memory or reasoning. These mental processes are collectively known as ‘cognition’. In some people, cognition declines further, leading to cognitive impairment or dementia, which affects 800,000 people in the UK. Therefore, dementia and cognitive decline are major public health issues, and there is increasingly a need to identify means of preventing or reducing the risk of dementia in order to improve the health of ageing populations worldwide. There is a growing body of evidence that indicates that people may be able to reduce their risk of dementia through certain lifestyle habits or activities. This is particularly true for people who are at higher risk due to their current cognitive abilities, lifestyle or overall health.

One promising avenue for reducing the risk of dementia is through dietary supplementation of Vitamin D. Vitamin D is produced by the body when exposed to sunlight during summer months and is available in some foods such as fish and eggs. However, a large proportion of older adults do not receive enough Vitamin D and few people take regular dietary supplements. Vitamin D is known to play an important role in brain health and cognition and may improve cognition and reduce the risk of dementia.

This study will provide vitamin D supplementation to people at risk of dementia, with the aim of determining whether this can reduce the risk of cognitive decline and dementia in older adults.

Who can participate?

People aged over 50 with dementia risk including those who have early changes in brain function (Age-Associated Cognitive Decline), a family history of dementia and/or subjective concerns about their cognitive health and are at risk of vitamin D deficiency in their diet.

What does the study involve?

Participants will be randomly allocated to receive either daily vitamin D supplements or a placebo (dummy pill). Pills will be taken daily for two years. Assessments will be completed at the beginning of the trial, after six months, one, and two years. The trial is being run using an online platform, meaning that registration, consent and all assessments will be completed online. Participants will log into a study portal, called the PROTECT study, and complete all study tasks through their computer.

What are the possible benefits and risks of participating?

Participants in the treatment group may benefit from the dietary supplement through

improvements to cognition if the trial is successful. All participants will be able to register for the national PROTECT cohort study as part of their involvement, which includes annual cognitive assessments and access to brain training games. There are no known risks to participants taking part in this study.

Where is the study run from?
University of Exeter (UK)

When is the study starting and how long is it expected to run for?
June 2018 to July 2023

Who is funding the study?
JP Moulton Foundation (UK)

Who is the main contact?
Mrs Ellie Pickering
e.pickering@exeter.ac.uk

Contact information

Type(s)
Scientific

Contact name
Mrs Ellie Pickering

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Additional identifiers

Integrated Research Application System (IRAS)
247136

Protocol serial number
4, IRAS 247136

Study information

Scientific Title
A randomised clinical trial of vitamin D to improve cognition in people at risk of dementia

Acronym
VitaMIND

Study objectives
Current study hypothesis as of 23/04/2020:
Vitamin D supplementation will confer a benefit to cognition in older adults with vitamin D deficiency and Age-Associated Cognitive Decline (AACD), subjective memory concerns and/or family history of dementia compared to placebo.

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Previous study hypothesis:
Vitamin D supplementation will confer a benefit to cognition in adults with AACD compared to placebo

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 05/03/2019, Wales Research Ethics Committee 3 (Health and Care Research support Centre, Castlebridge 4, 15-19 Cowbridge Road East, Cardiff, CF11 9AB, United Kingdom; +44 (0) 2920 785739; Wales.REC3@wales.nhs.uk), ref: 19/WA/0007

Study design
Interventional double-blind placebo-controlled two-arm single-centre randomized controlled trial

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Age-associated cognitive decline, subjective memory concerns and/or family history of dementia

Interventions
Current interventions as of 07/07/2023:
Participants will be randomised into either the treatment or control arm of the study. Randomisation is achieved through simple randomisation delivered through REDCap Cloud following stratification for age, gender and level of estimated vitamin D deficiency. The active treatment arm will receive two-piece HPMC capsules containing Vitamin D3 (4000IU) produced by Healthspan as their product ‘Elite Vitamin D3’. Participants will receive one capsule daily, by oral administration, over two years. The control group will receive an identical placebo capsule with the same treatment regimen. Follow-up is conducted online through computerised assessment at baseline, 26, 52, and 104 weeks. Participants receive automated reminders to log into their study portal and complete all assessments.

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Previous interventions as of 23/04/2020:
Participants will be randomised into either the treatment or control arm of the study. Randomisation is achieved through simple randomisation delivered through REDCap Cloud

following stratification for age, gender and level of estimated vitamin D deficiency. The active treatment arm will receive two-piece HPMC capsules containing Vitamin D3 (4000IU) produced by Healthspan as their product 'Elite Vitamin D3'. Participants will receive one capsule daily, by oral administration, over three years. The control group will receive an identical placebo capsule with the same treatment regimen. Follow-up is conducted online through computerised assessment at baseline, 26, 52, 104 and 156 weeks. Participants receive automated reminders to log into their study portal and complete all assessments.

Previous interventions as of 23/07/2019:
Participants will be randomised into either the treatment or control arm of the study. Randomisation is achieved through simple randomisation delivered through REDCap Cloud following stratification for age, gender, cognitive status and level of estimated vitamin D deficiency. The active treatment arm will receive two-piece HPMC capsules containing Vitamin D3 (4000IU) produced by Healthspan as their product 'Elite Vitamin D3'. Participants will receive one capsule daily, by oral administration, over three years. The control group will receive an identical placebo capsule with the same treatment regimen. Follow-up is conducted online through computerised assessment at baseline, 26, 52, 104 and 156 weeks. Participants receive automated reminders to log into their study portal and complete all assessments.

Previous interventions:
Participants will be randomised into either the treatment or control arm of the study. Randomisation is achieved through simple randomisation delivered through the online study portal (PROTECT), following stratification for age, gender and cognitive status. The active treatment arm will receive two-piece HPMC capsules containing Vitamin D3 (4000IU) produced by Healthspan as their product 'Elite Vitamin D3'. Participants will receive one capsule daily, by oral administration, over three years. The control group will receive an identical placebo capsule with the same treatment regimen. Follow-up is conducted online through computerised assessment at baseline, 26, 52, 104 and 208 weeks. Participants receive automated reminders to log into their study portal and complete all assessments.

Intervention Type
Supplement

Primary outcome(s)
Current primary outcome measure as of 03/07/2023:
Executive Function (Trails B) measured through online assessment using the PROTECT online test battery at baseline, 26, 52, and 104 weeks. This measure has been used to assess cognitive change in adults with dementia risk extensively in the literature (e.g. Park 2022, Kim et al 2021).

Previous primary outcome measure as of 23/07/2019:
Executive Function (Baddeley Grammatical Reasoning) measured through online assessment using the PROTECT online test battery at baseline, 26, 52, 104 and 156 weeks. This measure has been used to assess cognitive change in adults with AACD in a recent large online clinical trial (Corbett, et al. 2015a).

Previous primary outcome measure:
Executive Function (Baddeley Grammatical Reasoning) measured through online assessment using the validated cognitive assessment battery, CogTrack™, at baseline, 26, 52, 104 and 208 weeks

Key secondary outcome(s))
Current secondary outcome measures as of 03/07/2023:
The following outcomes were measured at the baseline, 26, 52, and 104 weeks:
1. PROTECT Cognitive Test Battery (Paired Associate Learning, Digit Span, Self-Ordered Search Task [working / spatial memory tasks], Switching Stroop and Grammatical Reasoning [Executive Function Tasks])
2. Instrumental Activities of Daily Living
3. EQ5D measure of health and wellbeing
4. Mild Behaviour Impairment Scale
5. Anonymous online survey to capture participant experience of the study

Previous secondary outcome measures as of 23/07/2019:
The following outcomes were measured at the baseline, 26, 52, 104 and 156 weeks:
1. Full PROTECT Cognitive Test Battery (Reaction time, Attentional Indices, Paired Associate Learning, Digit Span and Self-Ordered Search Task, Digit Vigilance, Verbal Learning, Spatial Working Memory, Executive Function)
2. Instrumental Activities of Daily Living
3. EQ5D measure of health and wellbeing
4. Mild Behaviour Impairment Scale

Previous secondary outcome measures:
The following outcomes were measured at the baseline, 26, 52, 104 and 208 weeks:
1. Full PROTECT Cognitive Test Battery (PROTECT test battery (Digit Vigilance, Verbal Learning, Spatial Working Memory, Executive Function)
2. Full CogTrack™ test Battery (Reaction time, Attentional Indices, Paired Associate Learning, Digit Span and Self-Ordered Search Task)
3. Instrumental Activities of Daily Living
4. EQ5D measure of health and wellbeing
5. Mild Behaviour Impairment Scale

Completion date
31/07/2023

Eligibility

Key inclusion criteria
Current inclusion criteria as of 23/04/2020:

1. Age 50 years and over
2. Already registered as a participant in the PROTECT study
3. Fulfilling research criteria for dementia risk: Either (1) Performing at least one Standard Deviation below age-matched population norms in two cognitive tests as measured using the validated PROTECT and online cognitive test battery; and/or (2) Reporting subjective memory concerns; and/or (3) Reported family history of dementia
4. Fulfilling criteria for vitamin D deficiency risk: Defined by a self-reported scale to be

completed on registration.
5. Access to a computer and the internet.

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Previous inclusion criteria:

1. Aged 50 years and over
2. Already registered as a participant on the PROTECT study
3. Fulfilling the AACD criteria: performing at least standard deviation below age-matched population norms in two cognitive tests, as measured using the validated PROTECT and CogTrackTM online cognitive test batteries
4. Fulfilling criteria for vitamin D deficiency risk (defined by a self-reported scale to be completed upon registration (based on Annweiler et al., 2017)
5. Access to a computer and the internet

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
50 years

Sex
All

Total final enrolment
685

Key exclusion criteria
1. Diagnosed with dementia
2. Already participating in another active interventional clinical trial
3. Regularly taking any supplement containing vitamin D:
3.1. If the supplement is prescribed for a pre-existing condition, the participant will be excluded
3.2. If the supplement is bought over the counter, the participant will have the option of stopping the supplement and re-registering for the trial after a 28 day washout period
4. Prescribed the medication Digoxin (Lanoxin)

Date of first enrolment
01/01/2019

Date of final enrolment
26/03/2021

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University of Exeter Medical School
St Luke's Campus
University of Exeter
Exeter
United Kingdom
EX1 2LU

Sponsor information

Organisation
University of Exeter

ROR
https://ror.org/03yghzc09

Funder(s)

Funder type
Other

Funder Name
JP Moulton Foundation

Results and Publications

Individual participant data (IPD) sharing plan
Current IPD sharing plan as of 03/07/2023:
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Anne Corbett (a.m.j.corbett@exeter.ac.uk) and Mrs Ellie Pickering (e.pickering@exeter.ac.uk). Fully anonymised study data will be available as composite cognitive scores and raw numerical scores for all other outcomes after the publication of the trial outcomes (expected July 2024) for three years. Data access will require a data access application submitted to the PROTECT steering committee, (protect.data@exeter.ac.uk) which is reviewed and approved on a case-by-case basis. Consent from participants will be collected to enable

anonymised data sharing for approved collaborators. The steering committee retains the right to refuse the use of data in the event of a conflict with the overall PROTECT study core research.

Previous IPD sharing plan:
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Anne Corbett (a.m.j.corbett@exeter.ac.uk) and Mrs Ellie Pickering (e.pickering@exeter.ac.uk). Fully anonymised study data will be available as composite cognitive scores and raw numerical scores for all other outcomes after publication of the trial outcomes (expected January 2023) for three years. Data access will require a data access application submitted to the PROTECT steering committee, which are reviewed and approved on a case-by-case basis. Consent from participants will be collected to enable anonymised data sharing for approved collaborators. The steering committee retains the right to refuse use of data in the event of conflict with overall PROTECT study core research.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results		15/01/2025	15/01/2025	No	No
HRA research summary			28/06/2023	No	No
Protocol file	version 8	05/05/2023	03/07/2023	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes