

## The relationship between BCHE and APOE genes and the Alzheimer disease: a meta-analysis

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### Citation

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### Review question

Is there an association between the variants of the BCHE and APOE genes and Alzheimer's disease?

### Searches

The databases searched will be EMBASE, Web of Science and MEDLINE. The research strategy will be created with reference to the Cochrane Manual for the Systematic Review of Interventions and the Manual of the Human Genome Epidemiology Network (HuGENet). The search strategy will be published / made available in full of the article.

### Types of study to be included

All types of studies will be included, excluding reviews and meta-analyses.

### Condition or domain being studied

Alzheimer's Disease patients.

### Participants/population

Studies collecting data from patients diagnosed with Alzheimer's disease and with evaluation of the APOE and BCHE genotypes

### Intervention(s), exposure(s)

It is known that genetic factors can act as protection or risk in the development of Alzheimer's disease. This review will include genetic studies that have identified an association between butyrylcholinesterase genotypes and different Apolipoprotein E alleles in the pathophysiology of Alzheimer's disease. Additional data such as protein quantification, enzyme activity, different plasma forms of BChE will also be analyzed.

### Comparator(s)/control

Elderly control. Cognitively healthy elderly, that is, without diagnoses of dementias

### Main outcome(s)

Association between Alzheimer's disease and BChE K variant with APOE e4 allele.

### Measures of effect

Chance of developing AD compared to control group through relative risks

### Additional outcome(s)

Association between activity and concentration of data obtained from apoe and bche

### Measures of effect

Chance of developing AD compared to control group through relative risks

### Data extraction (selection and coding)

Articles will be included that made a genetic analysis for apoe and bche, as well as those that made genetics and protein.

### Risk of bias (quality) assessment

Bias is assessed with reference to HuGENet handbook for evaluation of genomic studies.

### Strategy for data synthesis

We provide an appropriate narrative and statistical analysis of the results of the included studies. At the end, a meta-analysis will be carried out

### Analysis of subgroups or subsets

None planned

### Contact details for further information

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### Organisational affiliation of the review

Universidade Estadual do Centro-Oeste

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### Review team members and their organisational affiliations

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### Type and method of review

Epidemiologic, Meta-analysis, Systematic review

### Anticipated or actual start date

01 February 2021

### Anticipated completion date

31 December 2021

### Funding sources/sponsors

Neuroscience and behavior research group, Unicentro

### Grant number(s)

State the funder, grant or award number and the date of award

Funded by the Association of Studies, Research and Support for people with ALzheimer (in Portuguese - AEPAPA)

### Conflicts of interest

### Language

English

### Country

Brazil

### Stage of review [1 change]

Review Completed not published

### Subject index terms status

Subject indexing assigned by CRD

### Subject index terms

Alzheimer Disease; Apolipoprotein E4; Apolipoproteins E; Humans

### Date of registration in PROSPERO

07 March 2021

### Date of first submission

05 February 2021

### Stage of review at time of this submission [2 changes]

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	Yes
Risk of bias (quality) assessment	Yes	Yes
Data analysis	Yes	Yes

### Revision note

completed but non-published

*The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.*

*The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.*

### Versions

07 March 2021

07 March 2021

03 November 2021

10 January 2022

