

Protocol

Which variables are useful for phenotyping dementia in primary care records? A meta-analysis

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Rationale

Dementia is usually identified in primary care by general practitioners (GPs) and most identified patients are referred on to memory assessment clinics for formal diagnosis. However, epidemiological studies suggest only 50% of dementia cases are recorded in general practice. The UK government and the NHS have made increasing diagnosis rates a strategic priority. A range of indicators in the primary care record are likely to be predictive of patients at high risk of dementia and could be combined in a predictive model to help increase diagnosis rates. As part of the Wellcome Trust funded ASTRODEM study, we aim to conduct a systematic review and meta-analysis to identify conditions and medications previously found to be associated with dementia in primary care records.

Research Questions

1. What signs and symptoms of dementia are recorded in primary care prior to dementia diagnosis?
2. What other clinical or health factors are associated with dementia onset/diagnosis in primary care?
3. Which factors might be useful in a case-detecting or phenotyping algorithm using primary care data?

Methods

Eligibility criteria for studies

PECOCS Framework	
Population	Elderly primary care patients (>65 years) with a diagnosis of dementia
Exposure	Any observed risk factor – symptom, condition, lifestyle factor, medication, referral, test. Measured before, cross-sectionally with, or shortly after dementia incidence.
Comparator	N/A
Outcome	All cause or unspecified dementia, Alzheimer’s or Vascular dementia *
Context	General practice / primary care database

Studies	Observational studies (case control/cohort) in routinely collected primary care data All Years In English Keywords limited to title and abstract
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*Where studies define a variable/risk factor as the outcome and dementia as an exposure, we will consider including them in the meta-analysis if:

1. Dementia and variable/risk factor are measured cross-sectionally in the study
2. Enough data is provided that the N cases of dementia and N cases of non-dementia can be calculated, and the number exposed to the variable/risk factor for each of these groups can be calculated.
3. No adjustment or covariates have been included in the published analysis which prevent this recalculation.

Exclusion criteria:

Papers will be excluded if they cover:

- care/management of dementia.
- Screening or screening tools.
- Ability of GPs to recognise or diagnose,
- impediments to diagnosis,
- concordance with guidelines,
- patient/caregiver experience of diagnosis,
- clinical guidance and consensus papers,
- prediction of prognosis, survival, institutionalisation.
- Are review articles
- Are not in English

Information Sources to be Searched:

- MEDLINE/Pubmed
- Web of Science
- SCOPUS
- UK primary care database publication lists (e.g. CPRD and THIN)
- Reference list of journal articles found will be scanned for relevant journal articles

Search Terms

A pre-defined combination of identified search terms as described in the table below will be used. Search terms from MeSH.

Dementia	Primary Care	Diagnosis
Dementia*	Primary Health Care,	Diagnos*
Alzheimer	Primary Care	onset

	General Pract*	Predict*
	Family pract*	

Primary research articles published in English will be eligible for inclusion.

How search results will be obtained

The searches will be carried out between November 2015 and February 2016. The exact search terms used and the procedure followed to obtain the search results will be recorded.

The date and time that searches are carried out will be recorded so that further searches can be carried out at a later date to ensure that all current journal articles are included in the review and the results can be replicated at a later date.

The search results will be downloaded into EndNote X7 with abstracts when available. When reaching stage 4 of the study selection articles with subscriptions from the University of Brighton or University of Sussex libraries will be collected and those not subscribed to will be ordered via the Brighton and Sussex University Hospital’s Library/ Brighton University Inter-Library Loan system.

How the relevant studies will be selected:

The studies will be reviewed via a 4-stage process:

1. All the identified articles from the above mentioned database will be exported to Endnote 7 and duplicates will be removed using the find duplicates tool in the software.
2. The titles of the remaining search results will be screened by two reviewers (NG and EF) to exclude irrelevant articles. Review articles will also be excluded at this stage but only after their reference list has been checked to find any relevant primary articles. Pubmed/WOS/Scopus searches will be screened by NG. Primary care database searches will be screened by EF.
3. Abstracts of the remaining articles will then be checked for their relevance for inclusion. NG & EF to screen.
4. The remaining full text articles will be collected and reviewed to finalise those included in the systematic review. A quality assessment will be carried out this stage. NG & EF to agree all decisions at this stage.

Quality Assessment

To assess the methodological quality of the studies included in this systematic review a quality rating scale will be used. We will use STROBE rating scale for quality assessment, the scale will be modified and adopted where necessary.

How and what data will be extracted:

Data will be independently extracted using a data collection table. For original research data extracted will include:

- Authors

- Publication year
- Country and Setting
- Type of Data
- N (cases and controls)
- % Female in study
- Design (retrospective, prospective, cross-sectional)
- What does it predict (e.g. dementia, cognitive impairment, memory impairment etc)
- Follow up time (how long before diagnosis)
- Listed predictors or correlates
- Analysis type
- Effect size, odds ratios, significance etc
- N exposed to each correlate (separate table)

Data Analysis

Raw data will be extracted (N cases (dementia), of which N exposed; N controls (non-dementia), of which N exposed) from published studies.

Where data is not in this format in the published article, corresponding authors will be contacted twice requesting data.

Once raw data have been extracted into an excel file from studies/authors and organised by variables/risk factor, data will be entered into RevMan 5.3 to estimate pooled odds ratios with associated 95% CI for each variable/risk factors.

Heterogeneity is expected to be low due to the standardised sources of data, however, when I^2 statistic is >50% we will use a random effects analysis to account for the effects of heterogeneity.