Mild cognitive impairment project: protocol

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Background

Cognitive impairment is an overarching term referring to deficits in one or more of the areas of memory, problems with communication, attention, thinking and judgment. Impairment can range from mild to severe. Mild cognitive impairment (MCI) is defined as objective cognitive symptoms (e.g. memory problems) in the absence of dementia[1]. MCI is common in older people, affecting 20% of those aged over 65[1]. Subjective cognitive decline (SCD), where people report problems but perform normally on cognitive tests, affects half of over-65s.

Although most people with MCI do not go on to develop dementia, the condition is associated with increased dementia risk and this may lead people with MCI (or SCD) to seek help from health services. People with MCI may also be identified as a result of treatment for other conditions in a range of settings.

Access to services for people with MCI is a complex issue. Lifestyle changes can reduce modifiable risk factors for dementia, including cardio-metabolic dysfunction (diabetes and cardiovascular risks), physical inactivity, social isolation, hearing loss, mental illness, alcohol and smoking[1]. While there are numerous interventions aimed at modifying lifestyle there appear to be no evidence-based interventions aimed specifically at preventing dementia and suitable for delivery on a large scale. Responsibility for preventing dementia also falls into a grey area between public health (the responsibility of local authorities) and the NHS. A review of policies and strategies for dementia prevention in England found limited evidence for their implementation at the clinical level[2]. NHS memory services are limited to people with a diagnosis of dementia and are unable to help those with MCI beyond 'signposting' to other services[1].

The current configuration of services leads some health professionals to question the value of identifying people with MCI. They argue that a 'label' of MCI may worsen anxiety or other mental health problems without offering access to effective treatments not otherwise available. On the other hand, prevention of dementia is a high priority for those directly affected and society as a whole.

In 2017, the NIHR HS&DR programme issued a call for research into cognitive impairment (17/107: Organisation of services and workforce interventions for the assessment and management of older adults with cognitive impairments in generalist health and care services). The response to this call was limited. The HS&DR programme team have requested the Sheffield HS&DR Evidence Synthesis Centre to review the current evidence base, taking different perspectives into account, to identify key implications for research and service delivery.

An initial scoping search of the MEDLINE database (November 2020) identified some potentially relevant papers. In particular, a consensus meeting held in Manchester in 2019 led to the publication of a clinical guideline on MCI in November 2020[3]. The authors stated that the guideline covers 'the use of neuroimaging, fluid biomarkers, cognitive testing, follow-up and diagnostic terminology' in MCI. While clearly important for UK practice, this guideline does not cover the full range of topics of interest to the HS&DR programme. Indeed, one of the authors' key recommendations is that the

National Institute for Health and Care Excellence (NICE) should produce guidance on MCI. In the absence of such guidance, a targeted evidence review may be of value for both research commissioners and decision-makers in health and social care.

Research questions

We will aim to address the following questions:

- What is the evidence base around the assessment and management pathway of older adults with mild cognitive impairment in acute hospital wards, community/primary care and residential settings? In particular:
    - How are older adults presenting with memory problems investigated to understand the underlying cause of impairment?
    - What are the advantages and disadvantages of a 'diagnosis' of mild cognitive impairment? We will aim to address both patient and health/social care provider perspectives
    - What is known about the experience of health and care services from the perspective of people with memory problems and their support networks (e.g. family, friends and other carers)?

Inclusion criteria

Participants: Older adults (likely to be 60+ or 65+) with memory problems, with or without a diagnosis of MCI. Relevant health and social care professionals, family caregivers and volunteers. People with a formal diagnosis of dementia will be excluded.

Interventions: Screening and assessment tools (including staff training); management pathways and service models for people with MCI. Lifestyle interventions intended to reduce the risk of developing dementia will be excluded.

Comparator: The most relevant comparator is no treatment/standard care. Quantitative studies with and without a control/comparator group will be included if they meet other criteria.

Outcomes: Outcomes of interest include quality of life, mental health and other patient/carer outcomes; and health system outcomes, for example measures of costs/resource use.

Study designs: Quantitative research studies of any design; qualitative research involving interviews, focus groups etc.; mixed-methods studies. Service evaluations from the UK only. UK-relevant guidelines, policy documents and grey literature. We will also include systematic and narrative literature reviews.

Context/setting: Health and social care, including acute hospital wards, community/primary care and residential settings. While the main focus is on the UK, studies from other OECD countries will be included to address gaps in the UK evidence base.

Other exclusions: Editorials, commentaries, news and discussion articles will be excluded unless they provide full details of a service or pathway. Books, book chapters, theses and conference abstracts will be excluded.

Search strategy

We will search the following sources:

MEDLINE, EMBASE, PsycINFO, Scopus, CINAHL and Science and Social Sciences Citation Indexes.

We will limit the search to publications in English between 2010 and 2020; earlier publications will be incorporated by including relevant literature reviews. A sample MEDLINE search strategy is presented in Appendix 1.

Reference and citation searching of included studies and relevant existing reviews will also be conducted.

In addition, grey literature searches will be performed to retrieve clinical guidelines, policy documents and reports related to mild cognitive impairment from relevant websites.

Review methods: Study selection, data extraction and quality assessment

Search results will be downloaded to a reference management system (EndNote X9.2) and duplicates removed. Unique references will be imported into EPPI-Reviewer 4 systematic review software for screening and analysis. Titles/abstracts of imported references will be screened against the inclusion criteria. A 10% sample of excluded references will be checked by a second reviewer to ensure consistency and guard against premature exclusion. References that appear potentially relevant will be screened as full text documents for a final decision on inclusion or exclusion. Uncertainties will be resolved by discussion among the review team.

We will extract and tabulate key data from the included studies, including study design, intervention/initiative (where applicable), population/setting, results and key limitations. Data extraction will be undertaken using the coding and reporting functions of EPPI-Reviewer 4 supplemented by other software (e.g. Microsoft Excel) if required. Data extraction will be performed by the two main reviewers (DC and AC) who will check a 20% sample of each other's work.

Quality (risk of bias) assessment will be undertaken for studies that use a recognised design for which an appropriate quality assessment tool is available. We will use quality assessment tools provided by the Joanna Briggs Institute (https://joannabriggs.org/ebp/critical_appraisal_tools), together with the CASP tool for qualitative studies and AMSTAR for systematic reviews. Quality assessment will be performed by the two main reviewers (DC and AC) who will check a 20% sample of each other's work. Assessment of the overall strength (quality and relevance) of evidence for each research question will form part of the narrative synthesis.

Evidence synthesis

We will undertake a narrative synthesis of the evidence based on the pre-defined research questions, including textual and tabular summary and critique of the included studies. We will synthesise quantitative and qualitative evidence using methods based on the principles of critical interpretive synthesis[4]. Briefly, critical interpretive synthesis (CIS) is a synthesis approach designed to analyse a broad range of relevant sources and use analytical outputs to develop a conceptual framework. We plan to use a variant that mobilises the literature to construct two alternative conceptual frameworks; one that assumes a pivotal role for the establishment of a definitive diagnosis of mild cognitive impairment and one that progresses a management pathway in the absence of a definitive diagnosis.

We have chosen a CIS methodology given its acknowledged strengths as a form of systematic review that draws on both traditions of qualitative research inquiry and on systematic review methodology. A CIS is best suited to study a phenomenon that emerges over time and which constitutes a challenge to attempts to define, as is the case for mild cognitive impairment. In contrast to conventional systematic reviews, in which a precise question is tightly focused, CIS methodology offers the flexibility to draw from diverse relevant sources. Furthermore, CIS is not constrained to include only pre-specified designs or quality of documents. Documents are selected according to relevance and their capacity to address the research question. Starting from an initial compass question relating to the assessment and management of older adults with mild cognitive impairment, two alternative management pathways will be created and iteratively modified and defined as the synthesis progresses. We will particularly explore the extent to which assignment of a defining diagnosis or label determines the management pathway and eventual outcome. Quantitative and qualitative empirical studies will be classified by the extent to which they support each management pathway or to which they share a common ground between the alternative pathways. We will also explore the effect of contextual factors and their influence on the likelihood that individuals will progress down one or the other pathway.

Patient, public and stakeholder involvement

We will involve the Sheffield HS&DR Evidence Synthesis Centre's public advisory group from the outset, with additional PPI activity as required. We will seek NHS/commissioner input in consultation with ESC co-applicant Alison Turner.

Project timetable

	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	April 21	May 21	Jun 21	July 21
Scoping and protocol development	x	x	x						
Evidence identification		x	x	x					
Data extraction			x	x	x				
Quality assessment					x	x			
Analysis					x	x			
Draft final report							x		
Production of other outputs								x	x

References

1. Poppe M, Mansour H, Rapaport P, et al. "Falling through the cracks"; Stakeholders' views around the concept and diagnosis of mild ognitive impairment and their understanding of dementia prevention. Int J Geriatr Psychiatry. 2020;35:1349–1357. https://doi.org/10.1002/gps.5373.

2. Collins R, Silarova B, Clare L. Dementia primary prevention policies and strategies and their local implementation: a scoping review using England as a case study. J Alzheimers Dis. 2019;70(s1): S303-S318.

3. Dunne RA, Aarsland D, O'Brien JT et al. Mild cognitive impairment: the Manchester consensus. Age and Ageing 2020. doi: 10.1093/ageing/afaa228.

4. Dixon-Woods M, Cavers D, Agarwal S et al. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. BMC Medical Research Methodology 2006, 6:35 doi:10.1186/1471-2288-6-35

Appendix 1: Sample MEDLINE search strategy (January 2021)

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily <1946 to January 08, 2021>

Search Strategy:

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1 cognition disorders/ or cognitive dysfunction/ (83692)

2 mild.ab,ti. (361771)

3 1 and 2 (15704)

4 "mild cognitive impairment$".ab,ti. (17633)

5 "mild neurocognitive disorder$".ab,ti. (174)

6 mci.ab,ti. (18337)

7 "subjective cognitive decline".ab,ti. (577)

8 scd.ab,ti. (12367)

9 "functional cognitive disorder".ab,ti. (14)

10 fcd.ab,ti. (1433)

11 (memor$ adj (problem$ or lapse$ or impairment$)).ab,ti. (15313)

12 Dementia/pc [Prevention & Control] (1735)

13 Dementia/ (52474)

14 Primary Prevention/ (18859)

15 prevent$.ab,ti. (1466709)

16 14 or 15 (1473041)

17 13 and 16 (3114)

18 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 17 (61519)

19 Diagnosis/ or Delayed Diagnosis/ or Early Diagnosis/ (50994)

20 diagnos$.ab,ti. (2548327)

21 manag$.ab,ti. (1404024)

22 Primary Prevention/ (18859)

23 prevent$.ab,ti. (1466709)

24 labelling.ab,ti. (40317)

25 service pathway$.ab,ti. (58)

26 screening.ab,ti. (545191)

27 "service model$".ab,ti. (1766)

28 assessment tool$.ab,ti. (26285)

29 or/19-28 (5284586)

30 18 and 29 (23791)

31 limit 30 to (english language and yr="2010 -Current") (16466)

32 (comment or editorial or letter).pt. (1920184)

33 31 not 32 (16274)

34 exp United Kingdom/ (369592)

35 (national health service$ or njs$).ab,in,ti. (19172)

36 (english not ((published or publication$ or translat$ or written or language$ or speak$ or literature or citation$) adj5 english)).ti,ab. (96653)

37 (gb or "g.b." or britain$ or (british$ not "british columbia") or uk or "u.k." or united kingdom$ or (england$ not "new england") or northern ireland$ or northern irish$ or scotland$ or scottish$ or ((wales or "south wales") not "new south wales") or welsh$).ab,in,jw,ti. (2131833)

38 (bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))))).ti,ab,in. (1466105)

39 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in. (58046)

40 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in. (217258)

41 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in. (27491)

42 or/34-41 (2724361)

43 (exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/) (2942630)

44 42 not 43 (2570511)

45 33 and 44 (1975)

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