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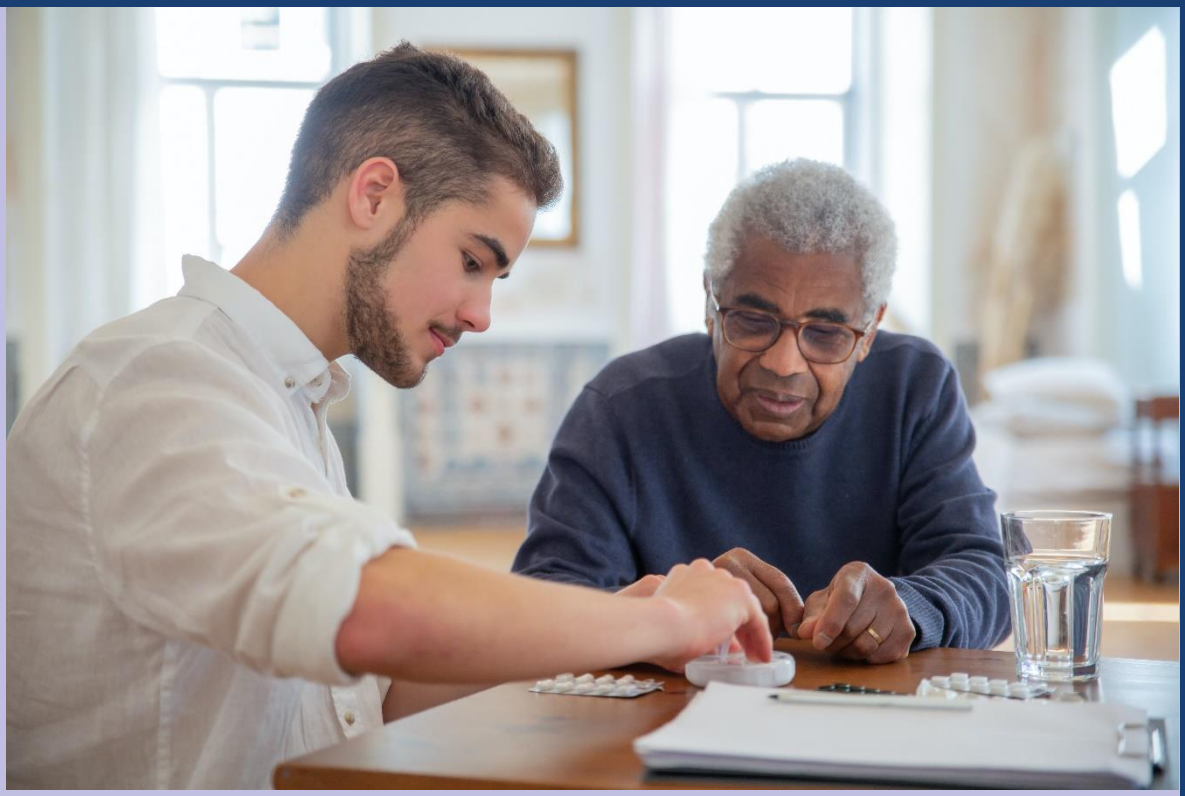

Factors associated with unmet need for support to maintain independence in later life: a mixed methods systematic review

Gemma Spiers, Patience Kunonga, Alex Hall, Daniel Stow, Andrew Kingston, Oleta Williams, Fiona Beyer, Peter Bower, Dawn Craig, Chris Todd, Barbara Hanratty

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Factors associated with unmet need for support to maintain independence in later life: a mixed methods systematic review

Full Report

Gemma Spiers [a], Patience Kunonga [a], Alex Hall [b], Daniel Stow [a], Andrew Kingston [a], Oleta Williams [a], Fiona Beyer [a], Peter Bower [b], Dawn Craig [a], Chris Todd [b], Barbara Hanratty [a]

NIHR Older People and Frailty Policy Research Unit

[a] Population Health Sciences Institute, Newcastle University

[b] Faculty of Biology, Medicine and Health, University of Manchester

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Key Messages

- A systematic review was undertaken to identify factors associated with unmet need for support, using quantitative and qualitative evidence.

- Demographic factors linked to unmet need in later life include being **male**, **younger age**, **living alone,** and **cultural and language barriers.**

- Socioeconomic factors linked to unmet need included **lower levels of income or non-housing wealth, perceived financial constraints, a low/medium standard of living and fair/poor housing quality**.

- Health and disability factors linked to unmet need include **poor self-rated health, a higher number of functional limitations, greater severity of depression, and in one UK study, a number of long-term health conditions**.

- Care factors linked to unmet need include **longer duration of unpaid caring**, **unpaid caring across multiple activity domains**, and **availability and quality of care**.

- Where these factors were reported across multiple studies, the overall trend suggests these factors are likely to be important. However, the statistical precision of these associations was not confirmed across all studies.

- Policy efforts to enhance equitable access to care could target people whose needs are more likely to go unmet.

- Targeting support at the younger old may aid efforts to prolong independence and good health.

- Exploring ways to minimise financial and material barriers to care may help to ensure people facing socioeconomic disadvantage access the support they need.

- Further work could explore ways to embed metrics relating to unmet need within social care data collection. This would support monitoring of populations with no or insufficient support to maintain independence.

- Further research is needed to understand if / how factors associated with unmet need differ over the course of older age.

EXECUTIVE SUMMARY

Background

Help with essential activities, like getting washed and dressed, preparing meals and managing medication, are critical to older people's health and independence. People who do not receive this support are more likely to experience poor quality of life and adverse health outcomes.

Evidence is accumulating on who is most at risk of having unmet need for support to stay independent. A synthesis of this evidence is needed to identify which groups of people are at risk of not accessing the support they need. Understanding these social patterns of unmet need can support policy efforts to enhance equitable access to care.

Review aim

This review aimed to synthesise evidence on factors associated with unmet need for support to maintain independence in later life. Two sources of evidence were used: primary quantitative studies, and systematic reviews of qualitative data.

Methods

Search strategy

Two search strategies were developed, tested and refined to identify quantitative and qualitative evidence. Seven bibliographic databases were searched, with no limits to publication date.

Additional searches were carried out using references lists attached to ageing datasets, Open Grey, and websites that publish potentially relevant literature. Reference lists of included studies were scrutinised for potentially relevant publications.

Review criteria

Studies were included if they reported factors associated with unmet need for support to maintain independence in populations aged 50+. As the focus of this review was unmet need for support to maintain independence, care home populations were excluded. Residents of assisted living or sheltered housing were included.

The outcome was 'unmet need for support to maintain independence'. Eligible measures of unmet need included absolute (help is needed but is not received), relative (help is needed and received, but judged to be inadequate/more help is

needed), a combination of both, or a question asking if participants perceive themselves to have an unmet need.
Independence was operationalised as**:** mobility, activities of daily living or instrumental activities of daily living. Studies using measures that combined functional independence needs with other types of need (e.g. health need) were included only if data were presented separately for unmet functional independence needs. Studies that reported unmet need for social care/long-term care services that support functional independence (e.g. home care, meals services) were also eligible.

Any exposure factor examined in relation to the outcome was eligible.

Eligible study designs were observational studies of quantitative evidence and systematic reviews of qualitative evidence. Studies had to be published in English using data from an OECD high-income country.

Study selection

Titles and abstracts were screened for relevance, and full texts of selected records were retrieved and assessed against the criteria for inclusion in the review. At both stages, two reviewers screened records independently, and conflicts were resolved through consensus.

Data extraction, quality assessment and synthesis

Relevant study details were extracted using an Excel spreadsheet. Quantitative studies were appraised using an adapted version of the Critical Skills Appraisal Programme (CASP) tool for cohort studies.[1] Systematic reviews of qualitative evidence were quality assessed using an adapted version of the CERQual approach.[2] Assessments were undertaken by two reviewers and a final judgement agreed after discussion.

A narrative synthesis summarised:

- Whether factors were associated with a greater or lower odds of unmet need (quantitative studies)
- Factors linked to unmet need (qualitative systematic reviews).

Findings

After screening, 43 primary quantitative studies and 10 qualitative systematic reviews were included. The quality assessment raised concerns about the quality of twelve of the 43 quantitative studies. No major concerns were identified for the qualitative systematic reviews.

We identified evidence about seven groups of factors explored in relation to unmet need: demographic, socioeconomic, health and disability, health service use, care configurations, unpaid carer characteristics, and area level measures.

For factors reported across multiple studies, there was evidence that being **male, younger age, living alone**, **having lower levels of income, poor self-rated health, more functional limitations,** and **greater severity of depression** were linked to unmet need.

These associations were not statistically significant across all studies. However, the overall trend in the direction of these associations across studies suggests they are likely to be important. Evidence from the qualitative reviews also underscores the importance of the same or similar factors: **living alone**, and **financial constraints**.

From evidence reported in single studies only, factors linked to unmet need included: **having a mortgage (compared to people who owned their home outright); a low/medium standard of living; fair/poor housing quality; lower non-housing wealth; reporting a dental visit; longer durations of unpaid caring**; and **unpaid caring across multiple activity domains**. In one UK study, a range of **long-term health conditions** were also linked to unmet need. There was less clarity about the role of other factors including those relating to the receipt of paid and unpaid care, sources of care, and carer characteristics.

Evidence from the qualitative reviews identified **care eligibility criteria, the quality, adequacy and absence of care** and **cultural and language barriers** as factors implicated in unmet need.

Policy and research implications

Policy efforts to enhance equitable access to care could target people whose needs are more likely to go unmet. Our review suggests this is likely to include men, the younger old, people who live alone, or are more socioeconomically disadvantaged and in poor health.

The finding that younger age is linked to unmet need may be particularly critical in light of efforts to postpone later-life dependency. Unmet needs at younger ages could potentially lead to an earlier, and more detrimental, loss of independence. Targeting support as early as possible is important to prolong people's independence and good health. Exploring ways to minimise financial and material barriers to care may help to ensure those facing socioeconomic disadvantage access the support they need.

Ongoing monitoring of unmet need as new data are collected will support policy efforts to ensure equitable access to care. To enable regular monitoring, it is important to embed unmet need metrics within social care data collection. Further research could seek clarification about if and how factors associated with unmet need for support to maintain independence differ over the course of older age.

Introduction

Help with essential activities like washing, dressing, preparing meals and managing medication, are critical to older people's health and independence. People who do not receive the support they need to remain independent as they age, are more likely to experience poor quality of life, malnutrition, dehydration, weight loss and falls. They also use more healthcare.[3-8] To promote equal ageing and equitable access to social care, policymakers require a good understanding of the social patterns of older people's unmet need for support to stay independent.

The need for review

There is a growing evidence base on risk factors for unmet need for support to stay independent .[9-19] This is a complex evidence base. Studies use different methods for categorising and analysing risk factors, varying measures of unmet need, and research has explored these issues in different populations.

Differences in measures of unmet need are particularly important. A measure of *absolute* unmet need identifies populations who need support but receive none. This approach will likely identify people most in need of support.[16,13] However, an absolute measure assumes that need can only be unmet if support is absent. A measure of *relative* unmet need addresses this by identifying populations who receive support but judge that support to be inadequate, or who wish for more support than they currently receive. A limitation of this approach is that a relative measure is driven by expectations of care, which differ across populations and time.[17,20] A relative measure may therefore under- or over-estimate unmet need, depending on the population. Because of these differences in what is considered an unmet need, the risk factors for each may differ.

Evidence about unmet needs is complex and challenging to interpret. A synthesis of this evidence is needed to clarify which factors are associated with unmet needs. Scrutiny of whether risk factors differ across ages, or between relative or absolute unmet need, would further enhance our understanding of this evidence.

Review definitions

Unmet need

In a recent review of the concepts of need and demand, Santana and colleagues (2021) define unmet need for healthcare as a shortfall in health that could be treated or addressed but is not met by healthcare supply.[21] This is a broad definition, and a useful way to understand the relationship between the demand and supply of healthcare. However, in studies of unmet need for social care and support to maintain independence, the operationalisation of unmet need is often more complex. This is due to:

- The different ways that ***need for support*** is identified;
- The different ways a need is considered ***unmet***;

- The different ***sources of support*** available.

For example, in some studies, unmet need for support to maintain independence is operationalised in two steps.[16] First, populations who need support to maintain independence are identified. In this step, the need for support is either perceived (i.e. people report they need help) or assumed (i.e. people report difficulties staying independent). Second, unmet need is quantified from this population by identifying people who receive no support ('absolute' unmet need), or receive support that is judged to be inadequate or report needing more help ('relative' unmet need). The support received may include formal, paid social care services or unpaid care from, for example, family and friends. Other studies simply ask participants directly if they perceive themselves to have an unmet need for support.[22]

In recognition of this complexity, unmet need is defined in this review as a need for support (paid or unpaid) to maintain independence, which is unmet because either no support is received (absolute unmet need) or because the support received is judged to be insufficient (relative unmet need). Unmet need may be quantified in the two-step process described above, or as a direct question. The identification of need may be perceived or assumed.

Independence

Independence is operationalised as *functional independence*: activities of daily living, instrumental activities of daily living, and mobility. This mirrors how independence is conceptualised and measured in studies that explore the risk factors for unmet need for support to live independently.[9,10,16,23] We consider the merits and limitations of this approach in the discussion section of this report.

Review aims and questions

This review aimed to address the following question:

1. Which factors are associated with unmet need for support to maintain independence in later life?

The review question was answered using two sources of evidence.[i] Our primary source of evidence was quantitative studies, which estimate the association between factors and the outcome *unmet need*. In addition, we looked for evidence in qualitative literature about ageing and care and support needs to stay independent, which may identify factors not included in the quantitative literature. Following initial scoping, we used systematic reviews of qualitative evidence, rather than primary qualitative studies (full details are provided in Appendix A).

The review was registered on PROSPERO (CRD42021250489).

[i] See appendix A for details of the revision to the protocol.

Methods

Search strategy

To identify quantitative studies, a search strategy was developed based on two concepts: *unmet needs/care poverty* and *activities of daily living*. To identify systematic reviews of qualitative evidence, a search strategy was developed based on three concepts: *independent living, home/social care*, and *experiences of ageing*. Both search strategies were designed using thesaurus headings and keywords, and translated across databases. For the qualitative systematic review searches, a published review filter from the Canadian Agency for Drugs and Technologies in Health (CADTH) was applied *(https://www.cadth.ca/strings-attached-cadths-database-search-filters)*. The search strategies for MEDLINE are in Appendix B.

To identify quantitative studies, five bibliographic databases were searched:

1. MEDLINE (OVID) [1946 to May Week 3], searched 21st May 2021
2. Embase (OVID) [1974 to 2021 Week 19], searched 21st May 2021
3. PsycINFO (OVID) [1806 to May Week 3], searched 21st May 2021
4. HMIC (OVID) [1979 to May 2021], searched 21st May 2021
5. CINAHL (EBSCO) [1981 to May 2021], searched 21st May 2021

To identify systematic reviews of qualitative evidence, four bibliographic databases were searched:

1. MEDLINE (OVID) [1946 to July Week 1], searched 9th July 2021
2. ASSIA (ProQuest) [1987 to current], searched 12th July 2021
3. CINAHL (EBSCO) [1981 to July 2021], searched 12th July 2021
4. EPISTEMONIKOS [to July 2021], searched 12th July 2021

Bibliographic searches were not limited by language, date or publication status.

Additional searches were carried out using:

- Reference lists attached to ageing datasets (CFAS, Newcastle 85+, ELSA, the Canadian Longitudinal Study of Ageing, the Health, Ageing and Retirement Study, the Mexican Health and Ageing Study, SHARE, The Irish Longitudinal Study of Ageing, and SWEOLD);
- Open Grey;
- Websites that publish potentially relevant literature: NATCEN, NHS Digital, the Health Foundation, and The King's Fund.

Finally, the reference lists of included studies were scrutinised for potentially relevant publications.

Review criteria

Review criteria are summarised in table 1.

Population

Studies were included if they reported factors associated with unmet need for support to maintain independence in populations aged 50+. The lower age threshold of 50 years was chosen to capture evidence about risk factors important earlier in the life course. This is particularly important for populations who experience early onset of age-related disability, such as those from lower socioeconomic groups and living in areas of greater deprivation.[24-26]

As the focus of this review is unmet need for support to maintain independence, populations living in care homes were excluded. Populations residing in assisted living or sheltered housing were included.

Outcome

The outcome was unmet need for support to maintain independence. Eligible measures of unmet need included absolute (help is needed but is not received), relative (help is needed and received, but judged to be inadequate/more help is needed), a combination of both, or a question asking if participants perceive themselves to have an unmet need. The *need for help* may be perceived (i.e. based on self-reported need for support) or assumed (i.e. based on self-reported or assessed difficulties staying independent). Studies that identified populations with a need for help, but not whether this need was unmet, were not eligible.

Independence was operationalised as *functional independence*: mobility, activities of daily living or instrumental activities of daily living. Studies using measures that combined functional independence needs with other types of need (e.g. health need) were included only if data were presented separately for unmet functional independence needs. Studies that reported unmet need for social care/long-term care services that support functional independence (e.g. home care, meals services) were also eligible.

The outcome *unmet need for support* may be binary (need is met/unmet), categorical, numerical, or a score (e.g. severity of unmet need). Unmet need may be measured at the individual level, or at area level in ecological studies.

For systematic reviews of qualitative evidence, reviews were ineligible if they reported evidence about difficulties staying independent where it was not clear if a need for support was perceived to be unmet.

Exposure

Eligible *factors* include, but are not limited to: demographic (e.g. sex), socioeconomic (e.g. income), living circumstance (e.g. living alone), disease-related (e.g. a clinical diagnosis), geographical (e.g. living in rural areas), health and care use related (e.g. number of GP visits), area level factors (e.g. social care spend/supply), and factors relating to the accessibility of care (e.g. affordability).

For systematic reviews of qualitative studies, eligible reviews include those that report evidence about unmet need for support and the factors linked to this. Ineligible reviews include those that report evidence of: unmet needs *only* (i.e. without any evidence of linked factors).

Study design

Eligible study designs were observational and systematic reviews of qualitative evidence. Studies published in English using data from an OECD high-income country were eligible.

Table 1. Review criteria

	Include	Exclude
Population	Populations aged 50+ years. Studies of mixed aged populations will be included if: separate analyses are presented for those aged 50+ years (e.g. through stratification); the average age of the sample exceeds 50 years; or, the majority of the sample are aged over 50 years.	Care home populations.
Exposure	Any factor: • Explored in association with unmet need for support to maintain independence (quantitative evidence) • Linked to having an unmet need to maintain independence (qualitative evidence).	
Outcome	Unmet need for support to maintain independence (relative, absolute, both, direct question of perceived unmet need). Independence: activities of daily living, instrumental activities of daily living, mobility.	Studies of prevalence of unmet need, or outcomes of unmet need.
Study design	Observational designs (e.g. cross sectional, longitudinal, retrospective or prospective cohort), or systematic reviews of qualitative evidence; studies published in English using data from high-income countries.	

Eligible study designs were observational, including cross-sectional and longitudinal analyses, and systematic reviews of evidence using any qualitative study design (e.g. interview study, ethnography, focus groups). Studies were included if published in English using data from an OECD high-income country.[27] No publication date limits were imposed.

Study selection

Records were managed in Endnote. Titles and abstracts were screened within Rayyan, an online software platform for systematic reviews.[28] Full texts of selected records were retrieved and assessed against the criteria for inclusion in the review. Publications not available through our own institutions were obtained via the British Library. For both stages of screening, two reviewers screened records independently, and conflicts were resolved through consensus.

Data extraction

A data extraction template was developed, piloted and refined using an Excel spreadsheet. Study details were extracted including: author, country, study design and data source, population age and diagnostic group (if applicable), and sample size.

For quantitative studies, data were extracted about: exposures/factors assessed in relation to unmet need; type of unmet need measured (relative, absolute, both, combined); how unmet need is measured (e.g. binary, score); and, estimates, confidence intervals and p values for all risk factors.

For systematic reviews of qualitative evidence, data were extracted about: the type of need judged to be unmet, how the need was judged to be unmet; and any factors linked to this, with contextual detail where relevant. These data typically comprised one of several components that formed a broader thematic finding around older people's needs. As our focus was the cited factor linked to unmet need, data about the broader theme were not extracted unless deemed relevant for context.

Study authors were contacted for clarification where necessary.

Quality assessment

The rationale for our choice of quality assessment tools, and a full account of how we adapted these tools for use in this review, is provided in Appendix C.

In brief, quantitative studies were appraised using an adapted version of the Critical Skills Appraisal Programme (CASP) tool for cohort studies.[1] The CASP tool does not use a scoring system to classify studies into, for example, low, medium and high risk of bias. Instead, the tool is designed to identify sources of bias, which should be considered alongside the interpretation of findings. Systematic reviews of qualitative evidence were quality assessed using an adapted version of the CERQual approach.[2] Reviews were given a summary judgement of whether there are no, minor, moderate or serious concerns.

For both the primary quantitative studies and reviews of qualitative evidence, the quality assessments were undertaken by two reviewers and a final judgement agreed after discussion.

Synthesis

Quantitative studies: data were grouped into seven categories of factors: demographic, socioeconomic, health and disability, health service use, care configurations, unpaid carer characteristics and area measures. These categories

were determined from the data and were *not* decided a-priori. For each factor within these categories, we used a narrative synthesis to summarise:

- the **direction** of the association between the exposure factor and unmet need (is the exposure associated with a higher or lower odds of unmet need);

- the **statistical precision** of these associations (do the confidence intervals indicate that an opposite direction is also possible, or if confidence intervals are not reported, are associations statistically significant);

Where two or more quantitative studies reported the same factor (exposure) with comparable analytical approaches, data were visualised in a forest plot to aid interpretation. Data were plotted using R software.[29] As the synthesis was focused on the *direction*, and not the *magnitude*, of associations, it was not necessary that the measure of the exposure factor was exactly the same. Rather, exposure measures should have been similar enough to allow meaningful judgement of the overall trend in association across studies.

To enable a judgement of statistical precision, data that were reported without confidence intervals were not included within these plots. For logistic regressions, coefficients (where reported) were exponentiated into odds ratios for comparability. Where studies used the same measure (e.g. sex) but different referents, data were inverted so that the referent was consistent across studies. Finally, the nature of this review was exploratory: to identify what factors are associated with unmet need. Therefore, pooled estimates of the magnitude of associations between exposures and the outcome were not judged appropriate for the synthesis.

Qualitative systematic reviews: data about the identified factors were tabulated and summarised. As we used evidence describing the factor linked to unmet need (and not the overarching thematic review finding – *see extraction, above*), a thematic synthesis was not required.

Integration of quantitative and qualitative evidence: data from the qualitative reviews were mapped onto the categories of quantitative data described above. No additional categories were necessary to accommodate the qualitative data. Quantitative and qualitative findings are summarised together where both are available within each category.

Findings

After screening, 43 primary quantitative studies and 10 qualitative systematic reviews were included (tables S1a and S1b, Appendix D, and figure 1a and b).[22,30-81]

Figure 1a. PRISMA Flowchart for quantitative primary studies

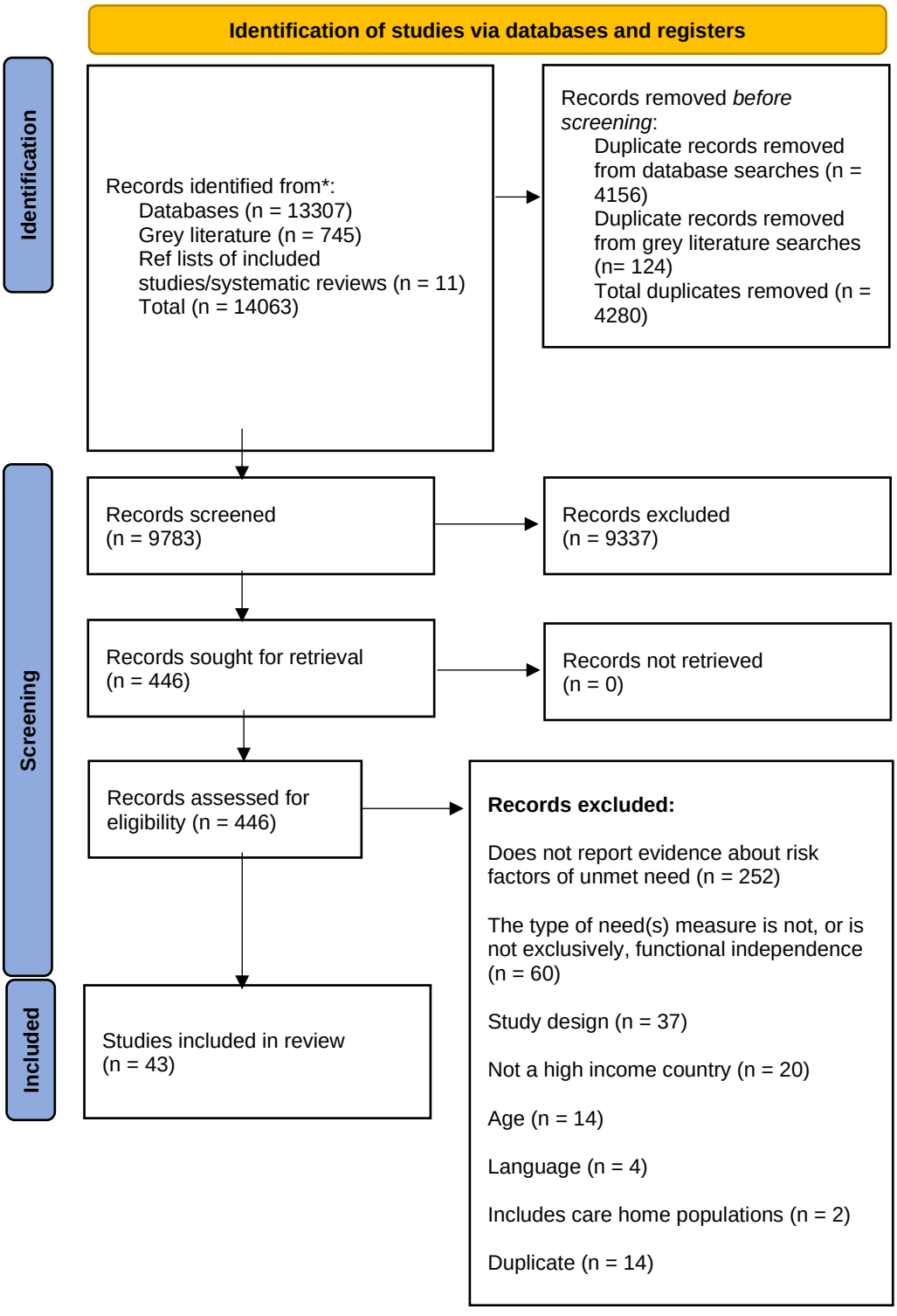
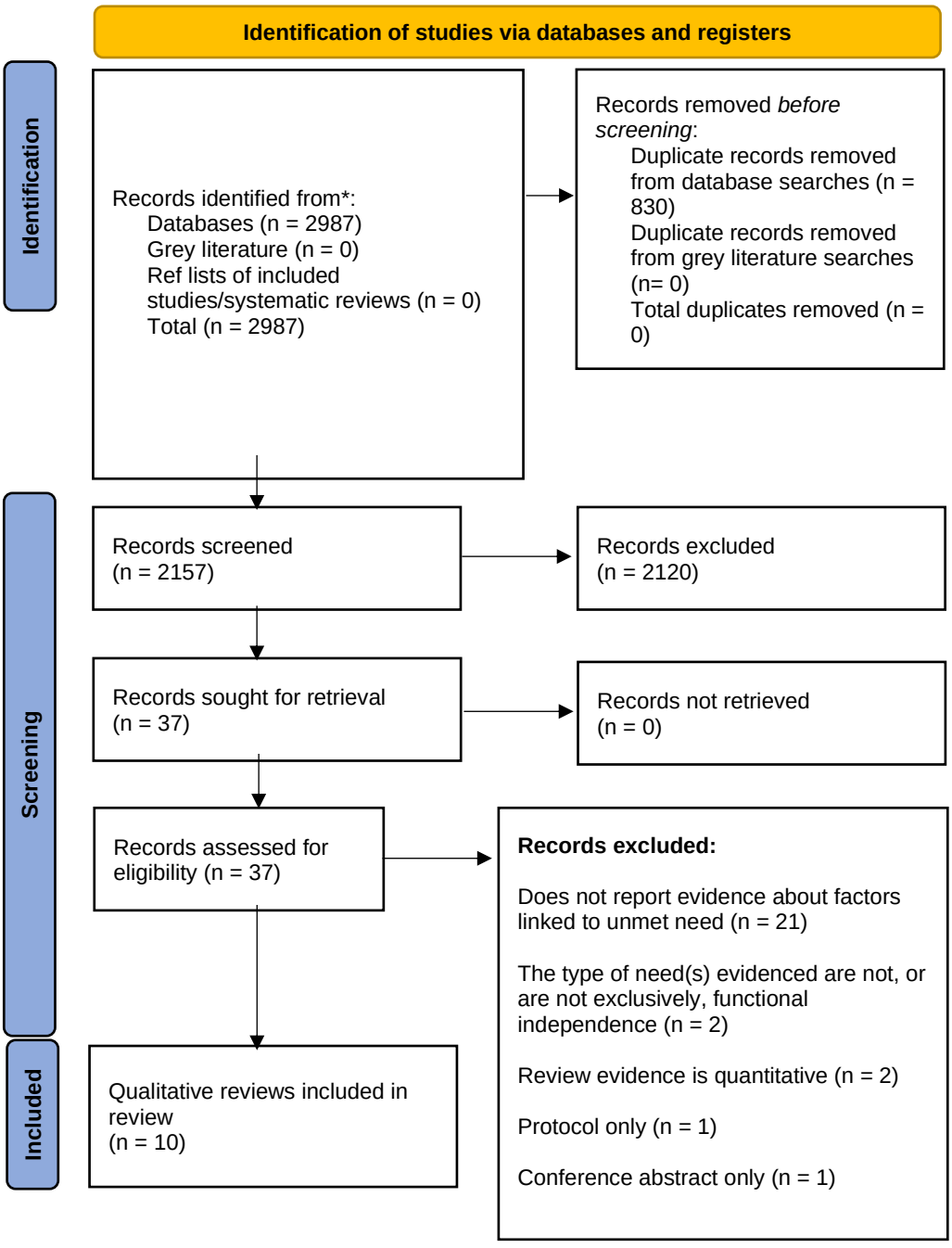

Identification of studies via databases and registers
Identification
Records identified from*:
Databases (n = 13307)
Grey literature (n = 745)
Ref lists of included studies/systematic reviews (n = 11)
Total (n = 14063)
Records removed *before screening*:
Duplicate records removed from database searches (n = 4156)
Duplicate records removed from grey literature searches (n= 124)
Total duplicates removed (n = 4280)
Screening
Records screened
(n = 9783)
Records excluded
(n = 9337)
Records sought for retrieval
(n = 446)
Records not retrieved
(n = 0)
Records assessed for eligibility (n = 446)
Records excluded:
Does not report evidence about risk factors of unmet need (n = 252)
The type of need(s) measure is not, or is not exclusively, functional independence (n = 60)
Study design (n = 37)
Not a high income country (n = 20)
Age (n = 14)
Language (n = 4)
Includes care home populations (n = 2)
Duplicate (n = 14)
Included
Studies included in review
(n = 43)

Figure 1b. PRISMA Flowchart for qualitative systematic reviews



Of the 43 quantitative studies, 24 used data from the US, six from the UK, three from Canada, two from the Netherlands, and one each from Australia, Chile, Slovenia, New Zealand, Japan and Spain. Two studies used data from multiple countries. Measures of unmet need were absolute (n=19), relative (n=5), both absolute and relative (n=15), or a direct question (n=2). In two studies, it was not possible to determine if the measure of unmet need was relative, absolute or both.

The majority of studies reported unmet needs as a binary outcome (i.e. needs were unmet/met). Two studies also used a binary outcome but reported the probability of receiving help based on a measure of unmet need. Two further studies reported the number or a score of unmet needs, and one used a three-category outcome (none/some/much unmet need). Most studies operationalised independence as difficulties with ADLs, IADLs, mobility, a combination of the three, or as individual IADL/IADLs (e.g. medication management). A minority measured unmet need for social/long-term care services.

Of the qualitative reviews, two were conducted in Canada, and one each in Austria, Czech Republic, Denmark, England, Italy, Portugal, the UK and the US. The majority of studies included in these reviews were from OECD high-income countries.[ii] In these reviews, unmet need was typically conceptualised as a judgement that help and support was inadequate (table S1b, Appendix D).

The quality assessment assigned major concerns to 12 of the 43 quantitative studies (Appendix C). Nine studies were assigned this rating because they did not adjust for any confounding variables.[iii] Three were assigned this rating because of potential biases in the representativeness of the sample, missing data and the absence of adjustment for demographic and socioeconomic variables. Given these important methodological limitations, these studies are summarised in Appendix table S1, but omitted from the synthesis. No major concerns were identified for the qualitative systematic reviews.

The seven groups of factors are summarised in table 3. In the following sections, we summarise evidence from each of these groups, integrating quantitative and qualitative data.

Forest plots are used to display data from studies using a logistic regression analysis.[iv] In these figures, estimates to the right of the vertical line indicate a greater odds ratio of unmet need. Estimates to the left indicate a lower odds ratio of unmet need.

[ii] Three reviews each included one study from a country that is not considered high-income in the OECD classification (China, Taiwan and Croatia). We did not exclude these reviews on this ground; to do so would have missed evidence from reviews where the majority used evidence from high-income countries.

[iii] These studies used bivariate chi-square analysis or reported descriptive cross tabulations with no test of association.

[iv] Data not included in these plots are those reported: in studies using analyses other than logistic regression (one study for each cox proportional hazard regression, ordered logistic regression, linear regression); in two studies that reported the probability of *receiving help* instead of *unmet needs* and which each used diverse analytical approaches; in only one study; without confidence intervals. These data are instead reported in the data summary tables and summarised in each section.

Table 3. Groups of evidence about factors linked to unmet need

Type of factors	Quantitative evidence	Qualitative evidence
Demographics	✓	✓
Socioeconomics	✓	✓
Health/disability	✓	
Health service use	✓	
Care configurations	✓	✓
Unpaid carer characteristics	✓	
Area level measures	✓	

Demographic factors

Figures 2a-e summarise the evidence about sex, age, marital status, living arrangements and ethnicity.

Sex: for studies using combined relative and absolute unmet need measures, there was a mixed pattern about sex and unmet need. However, for studies using absolute unmet need measures, there was a general trend of evidence to suggest that males have a greater odds of unmet need than females. The confidence intervals indicate there is much uncertainty in the estimates. Even so, the overall direction for studies using absolute measures (and some using combined relative and absolute), would suggest that being male may be a potential risk factor for unmet need.

Age: figure 2a uses the youngest age category at the reference. Compared to the youngest age groups, older age groups tend to show lower odds of unmet need in a majority of studies. There is a greater degree of statistical uncertainty in studies that use outcome measures based on unmet need for *services* (e.g. see Casado 2011), than outcome measures based on unmet need for help with *ADLs, IADLs* and *mobility*.

Marital status: there was no clear trend of evidence to indicate whether marital status predicted unmet needs.

Living arrangements: compared to those living alone, those living with others were typically less likely to have unmet needs, although there was a lack of statistical precision in some studies.

Ethnicity: evidence about ethnicity was inconsistent, but some evidence suggested that black, Hispanic and 'other' ethnic populations were more likely to have unmet needs than white populations. The confidence intervals indicated there was much uncertainty in these associations. The majority of these studies were published in countries other than the UK. Two UK studies reported data for ethnicity, one of which was not included in the forest plot display. These studies showed that non-white ethnicity and 'other' ethnicity were linked to unmet need.

Demographic data not eligible for inclusion within the forest plots are summarised in table S2 (Appendix D). Being a carer and living in a household of more than 3 people were significant predictors of unmet need (1 study each). Living with children was

associated with a lower probability of unmet need (1 study). Evidence about the link between urban/rural geography and unmet need was inconsistent.

In the qualitative reviews, demographic factors linked to unmet need included: living alone, proximity of friends/family, and cultural and language barriers.

Socioeconomic factors

Figures 3a-e summarise the evidence about education, occupation, income, housing tenure and Medicaid insurance status.

Education: Figure 3a uses the lowest educational attainment category as the reference category. Across studies, there is no clear trend of evidence about whether educational attainment is linked to a greater or lower odds of unmet need.

Occupation: In one UK study, there was no clear pattern of evidence about occupational classification and unmet need. Another UK study indicated that people in work were less likely to report unmet needs compared to those not in work.

Income: Figure 3c uses the lowest income category as the referent. Higher incomes were associated with lower odds of unmet need in three studies. One study measured income as a percentage of the US federal supplementary security income eligibility criteria threshold: there was no clear relationship with unmet need.

Housing tenure: There was no clear trend in evidence about housing tenure and unmet need (see below for data on non-housing wealth).

Medicaid insurance status: There was no clear trend in evidence about Medicaid insurance status and unmet need.[v]

Data not eligible for inclusion within the forest plots are summarised in table S3 (Appendix D). Factors linked to a greater odds of unmet needs included having a mortgage (compared to those who owned their home outright)[vi], a low/medium standard of living, and fair/poor housing quality. Greater non-housing wealth was associated with lower odds of unmet need in one UK study.

In the qualitative reviews, socioeconomic factors linked to unmet need included financial constraints.

Health and disability factors

Figures 4a-j summarise the evidence about self-rated health, presence of functional difficulties, number or volume of functional difficulties, physical functioning score, presence of a limiting illness, types of health conditions, and the number of health conditions.

Self-rated health: in most studies, good or excellent self-rated health was associated with lower odds of unmet need compared to fair or poor self-rated health. In contrast,

[v] Medicaid is a type of insurance in the United States; the findings for this factor are included in this report for transparency but are likely to be of low relevance to DHSC policy.

[vi] In a study population aged 75+ years, home ownership with a mortgage likely reflects a greater degree of disadvantage across the life course than those who own their home outright.

good and fair self-rated health were associated with greater odds of unmet need, compared to poor self-rated health, in one UK study.

Functional difficulties: typically, having a functional difficulty was associated with greater odds of unmet need compared to not having a functional difficulty.

Number or volume of functional difficulties: studies differed in how they categorised the number of functional difficulties reported by participants. Even so, there was a trend of evidence to suggest that more functional difficulties was associated with greater odds of unmet need compared to the lowest number of difficulties. The direction of this association was confirmed in most studies.

Score of physical functioning: five studies reported data about a score of physical functioning. Measures included: the Short Physical Performance Battery, the Global Activity Limitation Indicator, the SF-36 questionnaire, the Older Americans Resources and Services-ADL survey, and a measure categorising minimal, moderate and severe functioning based on the type of limitations reported. Typically, poorer physical functioning on these measures was linked to greater odds of unmet need. However, the confidence intervals indicated there was a lack of precision for most of these associations.

Presence of a limiting illness: there was no clear pattern of evidence about the link between having a limiting illness and unmet need.

Number of health conditions: there was no clear trend of evidence about whether the number of health conditions was linked to unmet need.

Individual conditions: figures 4g-o show data for individual conditions reported across two or more studies. Typically, there was contrasting evidence between studies about the association between individual health conditions and unmet need. There was some evidence that a greater number of depression symptoms and greater depression severity were linked to unmet need. In one UK study, a number of long-term health conditions were linked to greater odds of unmet need. These conditions included dementia, diabetes, cancer, asthma, high blood pressure and osteoporosis. Table S4 (Appendix D) summarises data about individual health conditions reported in single studies. Arthritis, pain, and constipation were linked to greater odds of unmet need.

Health service use factors

None of the data in this category were eligible for display on a forest plot. Data are summarised in table S5 (Appendix D). Reporting a dental visit was associated with a greater odds of unmet needs (1 study). The period in which this visit took place was not reported in the publication.

Care configuration factors

None of the data in this category were eligible for inclusion within a forest plot. Data are instead summarised below and in table S6 (Appendix D).

Paid care

One study indicated that having more paid than unpaid care was associated with lower odds of unmet need. However, this was not a statistically significant predictor.

Unpaid care

Greater levels of unmet need were reported by care recipients who received 10+ hours of unpaid care a week compared to those receiving less than this amount. In two other studies, receiving only unpaid care, and males who reported having more unpaid than paid care, were linked to greater odds of unmet need. However, these associations were not statistically significant.

Paid and unpaid care

A greater volume of *paid and unpaid* care combined was linked to lower risk of unmet need in one study. There was inconsistent evidence about the receipt or volume of care among other studies where the source (paid/unpaid) was not specified. Further, there was no clear link between the number of carers, or having multiple carers, and unmet need.

Source of unpaid care

There was conflicting evidence about whether the source of informal care (e.g. spouse, non-spouse, child) was linked to unmet need. For these data, the carer relationships that were compared differed across studies (e.g. spouse versus non-spouse, spouse versus daughter, parent-in-law versus non-parent-in-law). These varied comparisons may account for this inconclusive picture.

From the reviews of qualitative evidence, care factors linked to unmet need included: the quality and adequacy of care, absence of services, eligibility criteria, changes to care staff, a reluctance to burden family, and refusing or not seeking help.

Unpaid carer factors

Figures 5a-d summarises data about carer sex, age, educational attainment and self-rated health.

Carers' age, sex and educational attainment: there was no clear trend of evidence about carers' age, sex, educational attainment and unmet need.

Carers' self-rated health: compared to those with very good or excellent health, carers with fair, poor or bad health had greater odds of unmet needs, although these associations were not statistically significant.

Data not eligible for inclusion within a forest plot are summarised in table S7 (Appendix D). There was no clear trend of evidence about carer burden, and associations between most other carer factors and unmet need were not statistically significant. However, longer durations of caring (in years) and providing care across a greater number of care domains were each linked to unmet need.

Area level risk factors

One study reported evidence about long-term care coverage and unmet needs in the US (table S8, Appendix D). State level home help coverage and intensity, and the

proportion of people aged 65+ living in care homes, were not significantly associated with unmet needs. These variables did not moderate relationships between sex, living circumstances, ethnicity and unmet needs. However, populations aged 85+ had higher probability of unmet need than those aged under 85 years in states with higher rates of populations in care homes.

Discussion

This systematic review has identified the profiles of people who are likely to have an unmet need for support to maintain independence in later life. The majority of evidence described demographic, socioeconomic and health and disability factors. For factors reported across multiple studies, being male, younger, living alone, lower income, poor self-rated health, greater severity and number of depression symptoms, and more functional limitations were all linked to unmet need.

An important caveat is that these factors were not consistently identified with statistical precision across all studies. However, the consistency of findings and overall trend suggest they are likely to be important. The lack of precision may simply reflect limitations to study methods, such as the sensitivity of measures, or samples that were underpowered to detect differences. Evidence from the qualitative reviews also underscores the importance of the same or similar factors: living alone, and financial constraints.

From evidence reported in single studies only, factors linked to unmet need included: having a mortgage (compared to those who owned their house outright); a low/medium standard of living; fair/poor housing quality; lower non-housing wealth; reporting a dental visit, longer durations of caregiving and providing care across multiple activity domains. In one UK study, a range of health conditions were also linked to unmet need. There was less clarity about the role of other factors including those relating to the receipt of paid and unpaid care, sources of care, and carer characteristics.

Evidence from the qualitative reviews also identified aspects of care (e.g. eligibility criteria, the quality, adequacy and absence of care) and cultural and language barriers as important factors implicated in unmet need.

The trend toward younger age being linked to unmet need for support to maintain independence may reflect two factors. First, younger age may signal emerging needs that do not yet meet eligibility criteria, or which are not yet considered serious enough for intervention. Second, older people may be more likely to live in homes that are designed to meet their day-to-day needs, such as sheltered housing. We excluded populations in care homes in this review, so this is unlikely to explain why the oldest populations are less likely to have unmet needs. An important point in the interpretation of this finding is that categories of age groups varied across studies. ‘Younger’ age groups are not, therefore, homogenous in this synthesis. Rather, we use the term ‘younger’ to make a relative comparison to the oldest age categories. This means that we are unable to state which ages are most likely to be linked to unmet need.

Evidence that linked socioeconomic conditions (lower levels of income, poor housing quality, lower non-housing wealth, financial constraints) to unmet need also makes sense. Payment and financial barriers to care, housing adaptions and day to day aids are likely to marginalise more disadvantaged populations whose needs will go unmet.

Although worse health and greater disability were linked to unmet need, there was no clear pattern relating to the number of health conditions for an individual. This is unsurprising: a measure of the number of health conditions likely masks much heterogeneity in a person's health. This includes, for example, varying levels of illness severity, different stages of illness, and the diverse ways in which illness impacts on day-to-day life.

Implications for policy

Policy efforts to enhance equitable access to care could target people whose needs are more likely to go unmet. Our review suggests this will include people who are male, younger, living alone, more socioeconomically disadvantaged and in poor health. These findings should be considered alongside important contextual factors that are also implicated in unmet need, such as the availability and adequacy of care.

The finding that younger age is linked to unmet need may be particularly critical given the move towards prevention and postponement of later-life dependency. Unmet needs at younger ages could potentially lead to an earlier, and more detrimental, loss of independence. Targeting support as early as possible should prolong people's independence and good health.

The pattern of evidence that links socioeconomic disadvantage to unmet need should prompt consideration of approaches that overcome material and financial barriers to staying independent. This is particularly important given that many older people will pay towards the costs of their care.

Implications for research

Evidence in this review was drawn from OECD high-income countries. Inevitably, this introduces heterogeneity in evidence about unmet need that reflects diverse policy contexts and care systems. For policy representatives within the Department for Health and Social Care, we draw attention to the studies using UK data.[22,38,45,46,66] The most recently published was Gousia et al., (2021). This study combined all eight waves of ELSA, and analysed correlates of absolute and relative unmet need in over 80,000 participants.

Some, but not all, of the findings from the synthesis are mirrored in these UK studies. Being male, living alone, lower non-housing wealth, lower income and having an ADL disability were linked to unmet need. Younger age was also linked to unmet need in two studies, but not a third. Non-white ethnicity and 'other' ethnicity were linked to unmet need in two studies. Finally, the finding that better self-rated health was associated with unmet needs was not confirmed in the one UK study that reported this. Here, better self-rated health was linked to greater odds of unmet need, compared to those with poor self-rated health.

Ongoing monitoring of unmet need will support policy efforts to ensure equitable access to care. To enable regular monitoring, it is important to embed unmet need metrics within social care data sources. This could include, for example, data collection within care assessments. We highlight this as a key area of data development.

We were unable to consider the role of age in our synthesis (see below). Further research could seek clarification about if and how factors associated with unmet need for support to maintain independence differ over the course of older age.

Finally, the synthesis considered the role of the type of unmet need measure – absolute, relative, absolute and relative combined, or a direct question. Overall, the type of measure did not appear drive the pattern of results, except for sex. We would argue that the type of measure is still important to consider in future studies, given that relative measures are likely to be shaped by expectations of care, whereas absolute measures are not.

Strengths and limitations

To our knowledge, this is the first systematic review of factors associated with unmet need for support to maintain independence in later life. With no publication date limit, our work offers a comprehensive and up-to-date picture of this vast and complex evidence base.

There is no single approach to defining unmet need. Within the context of social care, studies take different approaches to: identifying need; defining how it is unmet; and the types of support (paid or unpaid). We adopted a definition of unmet need that accommodated these different approaches. This enabled a synthesis that maximised the inclusion of useful evidence, but inevitably increased heterogeneity in the findings.

Furthermore, we did not align our definition to England's Care Act criteria, where an eligible need for social care is based on having difficulties with two or more activities of daily living. To limit our definition of unmet need in this way (i.e. unmet need for two or more ADLs or IADLs) would be incompatible with our inclusion of international evidence from high-income countries with different systems of care and eligibility criteria.

Prior to this review, there was little clarity about whether factors linked to unmet needs differ across types of measure, or types of population. Our synthesis explored these potentially important methodological facets. Indeed, evidence about sex indicated a clearer trend for measures of absolute unmet need, compared to measures that combined absolute and relative operationalisations. We were unable to explore whether factors linked to unmet need differed by age. Details of the age profile of study samples were often insufficient to explore the role of age in a way that was consistent and meaningful.

Finally, an inclusive view of need for care goes beyond functional independence. Meaningful participation within society and connectedness with others are also critical social care needs.[82] However, studies typically defined (unmet) *need* in terms of a person's mobility and their ability to carry out basic and instrumental activities of daily living. This most likely reflects the data available within cohort studies. We

therefore acknowledge that our conclusions are limited to unmet need for support that relates to functional independence only.

Conclusion

Unmet need for support to maintain independence is an important indicator of access to care. This review identifies which populations may be most at risk of not accessing the support needed to live well when faced with the loss of independence. Ongoing monitoring of unmet need is critical to support policy efforts to ensure older people are supported when needed.

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