

Systematic searching on the AgeInfo database



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Summary

Databases that can be searched effectively and efficiently to retrieve abstracts of relevant research are an essential tool in the development of practice and policy based on best evidence. This report presents and discusses the findings of an evaluation of the AgeInfo database, which is provided and maintained by the Centre for Policy on Ageing, UK (www.cpa.org.uk). The evaluation was commissioned by the Social Care Institute for Excellence (SCIE).

AgeInfo and six other databases relevant to social work were searched in order to identify relevant published studies on a specific question regarding decisions about admission of older people to homes in the community (see below). The search was confined to research or reviews of research published in English-language, peer-reviewed journals between 1 January 1994 and 31 December 2003. The outcome of the searches were compared in terms of sensitivity, precision and the number of relevant articles that were unique to a particular database. In addition, a comparative appraisal of the search facilities on each database was undertaken.

The search across the seven databases retrieved 363 relevant articles on the search question 'How are decisions made about the entry of people aged 65 years and over into institutional care in the community?'. AgeInfo retrieved 48 relevant articles (13% of the total across all seven databases), considerably fewer than Medline, the Social Science Citation Index (SSCI) or the Cumulative Index of Nursing and Allied Health Literature (Cinahl), slightly more than PsycINFO or Social Services Abstracts (SSA) and rather more than CareData. AgeInfo enabled a much more precise search (that is, avoiding retrieving unwanted articles) than any other database, rather better than PsycINFO and SSA, and considerably better than the other databases. In terms of unique articles retrieved on each database, a researcher that omitted to use AgeInfo would miss approximately 5% of the relevant articles available across all seven databases.

Compared to the CareData database, AgeInfo had the additional features of proximity searching, emailing of results and the selection of all records at the same time (making for greater efficiency), but lacked a facility to limit a search by type of publication. Unlike the most effective and efficient databases, AgeInfo lacked facilities to order results alphabetically by author, limit a search by language, use suffixes (to enable a more precise search) or to print a search formula with the results.

AgeInfo is a sound and professional database with a range of useful facilities. While not in the top league with Medline, Cinahl or PsycINFO in terms of facilities or size, it is of a comparable standard to other databases used in this study. Its dedicated focus facilitates precise searching on topics related to health and social welfare in older age.

1 Introduction

This report presents the results of an evaluation, commissioned by the Social Care Institute for Excellence (SCIE), of the AgeInfo database, which is an information service provided by the Centre for Policy on Ageing (www.cpa.org.uk). The AgeInfo database is now provided to the public by SCIE at no cost to the user through Social Care Online (www.scie-socialcareonline.org.uk/), formerly (and at the time of this study) the Electronic Library for Social Care (eLSC) (www.elsc.org.uk).

AgeInfo was evaluated by carrying out a searching task (Taylor, 2003) on this and six other databases that provide abstracts of journal articles of interest to social work professionals. The ability to retrieve appropriate information when required is a key dimension for the development of practice and policy based on best evidence (Davies et al, 2000; Dempster, 2003). This focus on searching complements an earlier SCIE report (Popay and Roen, 2003) that focused on the methodology of appraising the quality of studies as part of the systematic review process.

The evaluative task was to retrieve research related to the question 'How are decisions made about the entry of people aged 65 years and over into institutional care in the community?'. The question was designed to require the retrieval of research using a range of methods, both quantitative and qualitative, as is common in social work research. Very often systematic reviews seek to retrieve research using experimental designs that address questions of effectiveness. Databases for healthcare staff often have facilities specifically designed to retrieve randomised controlled trials. Thus a search for a question about effectiveness might have given a biased perspective for the purpose of this exercise, as social work professionals are likely to be interested in research using a wider range of methods (Matthews et al, 1999).

The search of the databases was limited to publications of research or reviews of research. Government documents, policy or theoretical material were excluded. The search was limited to articles that were published in peer-reviewed journals in the English language during a 10-year period. The study team developed an approach that they had used previously (Taylor et al, 2003), which itself had built on previous work on search methodology (Adams et al, 1994; Dickersin et al, 1994; Hay et al, 1996; Meade and Richardson, 1997; Avenell et al, 2001; Brettell and Long, 2001).

The facilities available on each database were used to improve the quality of the search on that database. A key challenge was to achieve good sensitivity and precision of searching (Stevenson and Lawlor, 2004; Greenhalgh and Peacock, 2005). Good sensitivity means that a search of a database retrieves a high proportion of the total articles available on a given topic. Good precision means that a search of a database retrieves a low number of articles that are irrelevant to the topic. These terms and other aspects of the methodology are explained more fully in Section 2.

Overall, the approach to the evaluation was to appraise the comparative usefulness of the AgeInfo database in terms of the comprehensive retrieval of studies on a given topic with particular regard to the process of conducting a systematic review.

2 Method

2.1 Choosing the search question

The question addressed by the search was framed as 'How are decisions made about the entry of people aged 65 years and over into institutional care in the community?'. The question was chosen to relate to a topic of relevance to social work practice with individuals (Gomersall, 2005) as this is the 'bread and butter' work for social workers and is thus central to the interests of SCIE. The question had to be capable of being clearly defined; defining a question clearly and in operational terms is a key activity in every review (Counsell, 1997; Snowball, 1997). Decisions relating to a client's life and their health in an institution were excluded, as were decisions relating to transfers between different institutional facilities. Research that described the development of a methodology was also excluded.

The search was limited to peer-reviewed papers that were published during the 10 years from 1 January 1994 to 31 December 2003, covering a major period of development in community care services in the UK which is likely to have generated many research publications on the question. The search was confined to publications in the English language, as access to translation facilities was not available. In any case AgeInfo abstracts only English language publications. The search question focused on admission to institutional care, and the following categories were excluded in order to increase the precision of the search: respite care, intermediate care, step-down beds, palliative care, mental health (including addiction), terminal care, learning disorders and hospice care.

2.2 Selection of databases

The AgeInfo database was evaluated by comparing it with the following six databases: Medline, Cumulative Index of Nursing and Allied Health Literature (Cinahl), CareData, Social Science Citation Index (SSCI), Social Services Abstracts (SSA) and PsycINFO. The main criterion for selection of databases was availability and access. The above databases are available in the UK and they can be accessed in UK universities. All except SSCI and SSA are freely available online to staff in health and social services trusts in Northern Ireland. In addition, these databases include abstracts for most of the records for which they provide bibliographic data, and this feature served as the second selection criterion, as citations alone are much less helpful than abstracts in identifying eligible studies (Petrosino et al, 2000).

Each database also had particular features that recommended it for inclusion in the study. Medline, Cinahl and PsycINFO were selected because they are large international databases and are the main databases for medicine, nursing and psychology respectively. CareData was selected because it is the dedicated social work database for the UK and is provided free as part of Social Care Online through SCIE, as is AgeInfo subsequent to the commencement of this study. The SSCI was selected as the major general database for the social sciences. SSA was included because it is a dedicated social work database, albeit with a North American focus. A preliminary scoping study indicated that all of these databases contained a substantial amount of material that was relevant to the search question. The databases and their web platforms are shown in Figure 1. It should be noted that

AgeInfo was accessed through SCIE interface, and that the facilities available vary slightly from those available to CPA web subscribers and users of the CD-ROM version.

Figure 1

Databases used in the comparative study of AgeInfo, their web platforms and abbreviations used in this report

Age:	AgeInfo (scie-socialcareonline)
C:	CareData (scie-socialcareonline)
M:	Medline (Ovid)
N:	Cinahl (Ovid)
P:	PsycINFO (Ovid)
S:	SSCI (ISI Web of Knowledge)
A:	SSA (Cambridge Scientific Abstracts)

2.3 Development of search formulae

2.3.1 Basic principles

At their simplest level, electronic bibliographic databases work like electronic library catalogues using 'text terms' to search for titles and authors. However, bibliographic databases of journal articles can search abstracts (and sometimes additional keywords) as well as titles, and are also able to work with combinations of terms using developments of standard Boolean algebra (Taylor, 2003). In addition, of these seven databases, all except SSCI have the feature of a thesaurus of terms that is used to index articles on the database. This indexing facilitates retrieval of articles even where terminology differs between publications. By contrast, the search of SSCI (which does not have an indexing system) required the development of terms to cover different spellings and parts of speech (for example, 'care manager' and 'care management'), and the varied uses of language across countries and professional disciplines. A key challenge is to develop an approach to searching that will retrieve all relevant abstracts and yet not retrieve unwanted items – that is, a search that is both sensitive and precise.

2.3.2 Sensitivity of searching

The *sensitivity* of a search refers to its capacity to identify as many as possible of the total available relevant articles (Hopewell et al, 2002). More specifically, 'sensitivity' can be defined as the number of studies identified by the search of a particular database divided by the total number of known studies. For this exercise, the total number of relevant studies that were retrieved across all seven databases was used as the measure of the total number of known studies. This ratio was employed to compare the usefulness of the databases using the best feasible search formula on each.

2.3.3 Precision of searching

A search may become more sensitive as more terms are added, but it may also tend to retrieve more irrelevant articles. Therefore the *precision* of a search formula is also important (Haynes et al, 2005). 'Precision' may be defined as the number of articles identified by a search that are relevant (true positives), divided by the total number identified by the search on that database. In other words, precision is a measure of the positive predictive value of the search. The precision of the searches described here was improved using the techniques described below.

The issue of precision can also be measured from the 'opposite direction' – that is, in terms of the number of irrelevant articles generated by the search on a database. The results section gives the percentage of 'false positives' (equal to 100% minus the precision expressed as a percentage) as well as the precision.

2.3.4 Structuring the search

There were three stages involved in creating the search formulae: (1) creating concept groups, (2) refining the search terms within each concept group and (3) adding search filters with the use of the facilities on the chosen databases. Each stage is described below.

2.3.4.1 Concept groups

The first stage in developing the search formula was to structure the search question into concept groups. The basic concept groups relating to the search question posed here were:

- older people
- decision making
- institutional care in the community.

This structure of concept groups broadly corresponds to the PICO search structure (Booth et al, 2000):

- Population
- Intervention
- Comparison intervention
- Outcome.

The Population was conceptualised as older people; the Intervention as the process and decision making about admission and related financial aspects; and the Outcome was residential or nursing homes providing long-term care. The PICO category 'Comparison intervention' was not relevant to this study. The search terms on the databases to operationalise these concepts were incorporated into the search formula (see Appendix A).

These concept groups (see Figure 2) provided the basis for the development of the search formulae that was applied to the databases. A key challenge was to

create concept groups that were broad enough to retrieve all relevant articles (high sensitivity) and refined sufficiently (see next section) to reduce the number of irrelevant items retrieved (precision).

Figure 2
General structure of search formula

Population – Aged/elderly/older people AND
Intervention – Assessment/decision making AND
Outcome – Institutional care in the community AND
Limit facilities (eg dates of publication, language, research articles)

2.3.4.2 Refining the search terms

A number of approaches were used to refine the search terms within each concept group so as to increase precision. The facilities for refining terms varied between databases (see Table 1, page 7).

- **Truncation** By using wildcard characters (for example, \$ or *), varieties of a word are retrieved, which helps address the differences in spelling and terminology that occur between countries. All the databases had facilities that, in varying degrees, allowed for the root of a word followed by a symbol to be used to search for different forms of that word (for example, 'admission\$' to search for both 'admission' and 'admissions').
- **Indexing** Six databases had an index system that enabled users to increase the precision of a search to varying degrees and saved the considerable work required using only text terms on the database that lacked this facility.
- **Proximity searching** Six databases had some form of proximity searching. This facility adds precision by enabling a search to be conducted for two or more search terms within a certain number of words of each other, and in any order (for example, 'admission adj5 home' searches for 'admission' and 'home' within five words of each other).
- **Suffixes** Four databases had a facility whereby suffixes could be added to text terms (that is, not index terms) thereby adding precision to a search. For example, on some databases use of the suffix '.ti,ab.' limits the search for the word with this suffix to the title and abstract only. For example, '(admission\$ adj5 home\$).ti,ab.' will retrieve articles where 'admission\$' and 'home\$' occur within five words of each other in a title or abstract but not where these words appear in terms used to index the article. Searching titles and abstracts but not index terms in part of the search increased the precision significantly (Glanville, 2001).

2.3.4.3 Search filters

After creating the concept groups to establish the basic structure of the search formula and then refining the terms within each concept group, search filters were added in order to improve the precision of the search. The types of search filters that were used were language, date of publication and type of publication. The search filters were added by using the various facilities available in each database.

The search became more focused by filtering the records for these specific pieces of information.

- **Date of publication** All databases had a filter for date of publication. The publication limits were defined by the date when a paper was published. Defining the end of a search period by the date that a search was conducted might lead to problems with coverage if databases varied in the time taken to index articles. Searches were limited to articles published between 1 January 1994 and 31 December 2003 inclusive to overcome this problem.
- **Language** Five databases had a filter that allowed searches to be confined to publications in the English language.
- **Document type** Six databases had a filter to restrict searches to particular document types. The filter facilities available on the databases varied in quality, and were used as far as possible to restrict the search to articles that reported research (using any design or data collection method), or reviews of research.
- **Grey literature** The search was confined to publications in peer-reviewed journals, so search filters were used wherever possible to focus on this. The following were the main reasons for adopting this approach:
 - > Time and resources would not have permitted a full search of grey literature.
 - > The peer review process is the key mechanism used to appraise the quality of research publications and should lead to a reduction in the publication of methodologically weak or unoriginal research.
 - > Any good research that is published in government documents, theses, conference papers or organisational reports is likely to be published also in peer-reviewed journals.
 - > Political, commercial and confidentiality pressures could prevent the publication of worthwhile material (Smith, 1980), but these pressures are unlikely to affect social work researchers as much as medical or health care researchers.

It should be noted that the databases reviewed here may have varied coverage of grey literature.

2.4 Using the selection form

On completion of the database searches, the next stage in the process was to identify and select relevant articles from all of those retrieved. Each article was evaluated individually using a selection form (see Appendix B) containing a list of inclusion criteria. Two reviewers applied the form to the abstract of each article independently, in order to minimise bias (Meade and Richardson, 1997). Each reviewer had three options: to include or exclude an article or to state 'Undecided'. Decisions were based entirely on the information provided by the databases and were guided by the explanation of the inclusion criteria on the selection form guidance notes (Appendix C) that were created for the purpose. The two reviewers met to discuss their independent decisions, particularly disagreements and 'undecided' verdicts. Where uncertainty remained, a third reviewer was asked to make an independent decision.

3 Results

3.1 Database facilities

3.1.1 Refining search terms

Every database allowed the user to truncate words by using wildcard characters (for example, \$ or *), allowing for the retrieval of different varieties of a word. Suffixes – for example, '.ti,ab.' (see section 2.3.4.2) – were used on the four databases where these were available to increase precision. AgeInfo, together with CareData and SSA, did not have this feature. Although AgeInfo and SSA allow the user to specify a title search, this is merely a search for the title of an article. Proximity searching is available on all databases except CareData.

Table 1
Database facilities

Functions available on the databases	Age	C	M	N	P	S	A
Refining search terms (see 3.1.1)							
Does the database use truncation symbols?	Y	Y	Y	Y	Y	Y	Y
Does the database have an index system?	Y	Y	Y	Y	Y	N	Y
Can suffixes be used?	N	N	Y	Y	Y	Y	N
Is proximity searching a feature of the database?	Y	N	Y	Y	Y	Y	Y
Search filters (see 3.1.2)							
Can you limit by language?	N	N	Y	Y	Y	Y	Y
Can you limit by date of publication?	Y	Y	Y	Y	Y	Y	Y
Can you limit by type of publication?	N	Y	Y	Y	Y	Y	Y
Database outputs (see 3.1.3)							
Can the search formula be printed with the results?	N	N	Y	Y	Y	N	Y
Can you 'mark all'/'select all' records at once?	Y	N	Y	Y	Y	Y	Y
Can you sort the results alphabetically by author?	N	N	Y	Y	Y	Y	N
Can you email your results?	Y	N	Y	Y	Y	Y	Y

Key: Age = AgeInfo, C = CareData, M = Medline, N = Cinahl, P = PsycINFO, S =SSCI, A = SSA

3.1.2 Search filters

All databases allowed the user to limit searches by date of publication, and all except AgeInfo and CareData allowed the search to be limited by language. All except AgeInfo had a filter for type of publication, but the quality of these varied between databases; those on Medline, Cinahl and PsycINFO were more sophisticated.

3.1.3 Database outputs

- AgeInfo, CareData and SSCI did not allow the search formula to be printed with the results. The way to get a printed copy of the search formula on these databases was to print a copy of the screen where the search details are entered and attach it to the results.
- AgeInfo allowed a user to select all records, like all other databases except CareData. However, it was limited in terms of processing searches that involve large numbers of records. When full details of all records relating to the search in question were requested, the following message was generated: 'Error 400 – Bad request'. CareData had no facility to select all records; it showed and printed only 20 records at a time and lacked a screen icon to print the results. Printing had to be selected from the computer toolbar (that is, File > Print).
- AgeInfo automatically ordered the records alphabetically by the title of the article but there was no facility to order the records alphabetically by author (or any other way). SSCI could sort up to 300 articles alphabetically by first author. Medline, Cinahl and PsycINFO sorted up to 200 articles alphabetically by author – that is, results 1–200 were sorted from A–Z, 201–400 were sorted from A-Z and so on. CareData and SSA did not allow the records to be ordered alphabetically.
- AgeInfo, like every other database except CareData, had a facility that enabled users to email search results. This is an important facility for further processing of results.

3.2 Outcomes of searches

3.2.1 Sensitivity and precision

The search across the seven databases retrieved 363 relevant articles. The number of articles identified on each database, together with the sensitivity and precision of each search, is given in Table 2. The highest sensitivity was achieved on Medline (52%) and SSCI (46%); Cinahl also contained many relevant articles (30%). AgeInfo ranked fourth in sensitivity but retrieved only a small proportion (13%) of the total number of relevant articles retrieved across all seven databases. AgeInfo enabled a much more precise search (76%) than any other database, rather better than PsycINFO (51%) and SSA (41%), and considerably better than the other databases. It is important to note that AgeInfo is the only database in the comparative evaluation that is dedicated to a single client group.

Table 2
Articles identified and sensitivity and precision of searches

	Articles identified	Relevant articles	Sensitivity	Precision	False positives
AgeInfo	63	48	13.2%	76.2%	23.8%
CareData	53	16	4.4%	30.2%	69.8%
Medline	664	189	52.1%	28.5%	71.5%
Cinahl	339	110	30.3%	32.4%	67.6%
PsycINFO	84	43	11.8%	51.2%	48.8%
SSCI	805	168	46.3%	20.1%	79.9%
SSA	80	33	9.1%	41.3%	58.7%
Total 'hits'	2,088	607			
Total removing duplicates	1,645	363			

3.2.2 Unique articles retrieved

The number of relevant articles retrieved on one database but no other is illustrated in Table 3, giving an indication of how many articles would be missed if a particular database had not been used. It would be a major omission for a search on this topic if it failed to use both SSCI and Medline. Omitting to use AgeInfo would lead to a failure to retrieve approximately 5% of the articles available across all seven databases.

3.2.3 Inter-rater reliability

The similarity of the decisions by the two raters (inter-rater reliability) was measured using a weighted kappa score. This measurement was chosen because disagreements between the raters are not equal in magnitude between the three options. An 'include-exclude' disagreement is more significant than an 'include-undecided' or

Table 3
Relevant articles retrieved unique to a particular database

	AgeInfo	Caredata	Medline	Cinahl	PsycINFO	SSCI	SSA
Unique relevant articles	17	6	65	25	8	76	8
Unique relevant articles as percentage of total relevant articles	4.7%	1.7%	17.9%	6.9%	2.2%	20.9%	2.2%

an 'exclude-undecided' disagreement. Inter-rater reliability is illustrated in Table 4, which gives weighted kappa scores and the percentage agreement between raters for each database.

On this occasion, a very high inter-rater reliability was achieved. It is likely that this level of reliability between raters is attributable to:

- having previous experience of searching on a similar topic
- defining the search question in clear, specific terms
- developing and refining the selection form
- producing detailed written guidance notes for the raters to accompany the selection form
- applying the guidance consistently and thereby standardising the rating process.

The high concordance confirms the usefulness of the methodology adopted for this study.

Table 4
Inter-rater reliability results

	SSCI	Medline	Cinahl	Caredata
Rater 1 Include	165	188	110	16
Rater 2 Include	157	180	106	16
Rater 1 Undecided	0	2	3	0
Rater 2 Undecided	14	19	11	0
Rater 1 Exclude	640	474	226	37
Rater 2 Exclude	634	465	222	37
Weighted kappa score	0.97	0.96	0.96	1.00
Percentage agreement	97.8%	96.5%	96.2%	100%
	PsycINFO	SSA	AgeInfo	
Rater 1 Include	45	35	49	
Rater 2 Include	42	30	46	
Rater 1 Undecided	0	2	0	
Rater 2 Undecided	5	6	4	
Rater 1 Exclude	39	43	14	
Rater 2 Exclude	37	44	13	
Weighted kappa score	0.97	0.88	0.95	
Percentage agreement	94.0%	88.8%	93.6%	

4 Conclusions

The facility to undertake systematic retrieval of abstracts of articles from electronic bibliographic databases is an essential component of evidence-based practice. Systematic reviews of research require facilities for sophisticated searching that is both sensitive and precise.

A search question was chosen that could be clearly defined, and a range of six other databases relevant to social work and healthcare were selected in order to gauge the comparative advantages and disadvantages of the AgeInfo database. The modern development of Boolean algebra employed in electronic databases was used to create searches that were as sensitive and as precise as possible on each database, given their respective facilities.

The facilities available on the databases were considered under three aspects. Specific tools within each of these aspects were selected for evaluation in terms of their usefulness for systematic searching. AgeInfo had three of the four facilities available on most of the databases for refining search terms: suffixes could not be used, but it did use truncation symbols, had an index system and enabled proximity searching. In terms of search filters, AgeInfo had one of the three facilities commonly available. It could not filter for language or type of publication but could filter for date of publication. The filters on Medline, Cinahl and PsycINFO gave the user a wider range of limits, and in a more user-friendly way, than those available on the other databases. AgeInfo had two of the four facilities that were examined in terms of database outputs. The selection of records was efficient and results could be emailed although the search formula could not be printed with the results. The most significant weakness in terms of database facilities was that, on AgeInfo, the results could not be ordered alphabetically by author. AgeInfo may also have technical problems dealing with a large number of retrievals. It was beyond the scope of this study to compare the import of results into EndNote or Reference Manager.

Search outcomes were considered in terms of sensitivity, precision and the number of unique articles retrieved. AgeInfo retrieved just over 13% of the total number of relevant articles retrieved across all seven databases, and ranked fourth in terms of sensitivity. The much higher sensitivity of SSCI, Medline and Cinahl (compared to the other databases) reflects the larger size and international scope of these databases. AgeInfo gave the highest level of precision of the databases used (76%), which probably reflects the specialist focus of the database and its index terms. In terms of unique articles retrieved, the databases showed a similar pattern to that found for the sensitivity of the searches. The search on AgeInfo retrieved 17 unique relevant articles; omitting to use AgeInfo would lead to a failure to retrieve about 5% of the relevant articles retrieved across the seven databases.

This study achieved high inter-rater reliability across all the databases. The variation across the databases was too small to merit comment. The high consistency probably reflects the clarity achieved in refining the search question and the tools used to identify relevant studies, and confirms the effectiveness of this study design.

Subsequent to this study, it was discovered that the AgeInfo classification system does not treat 'older men' and 'older women' as subsets of 'older persons'. The system provides prompts to use 'older persons' for many words relating to older people, but not to these single gender terms. This is a limitation to the search facilities on AgeInfo and to this study. A further limitation is that, subsequent to the study, it was ascertained that the records on AgeInfo have been indexed only intermittently with terms relating to age. This may be why there is a caution on the help screen associated with the SCIE interface simple search against searching for 'older people' or similar terms on AgeInfo. It is strongly recommended that those responsible for the AgeInfo database should have a consistent policy on this, and that the thesaurus and guidance to users should be amended accordingly.

The exclusion of grey literature may have affected the results. It is possible that databases with a higher content of grey literature (which might include AgeInfo) might have had higher sensitivity if grey literature had been included. Although not formally measured, the number of items excluded (following retrieval) as being grey literature was very small. This consideration highlights the particular importance of authors and publishers in the social care field summarising their methods clearly in abstracts, and of databases providing search filters in relation to the research focus of articles.

It should be noted that the thesaurus-based search facility was used on the six databases where this was available. The retrieval rate for these six would almost certainly have been higher if a text term search had been used in addition to the thesaurus term search. However, that design would not have tested the effectiveness of the thesaurus system, which is a key feature for the user with limited knowledge of information science. A limitation of this study was that, although two additional databases (PsycINFO and SSA) were used in addition to those in the contractual arrangement, it would have been a more complete study if AgeLine and the Applied Social Science Index and Abstracts had also been included.

In terms of outcomes for this search question, AgeInfo retrieved about 13% of the total number of relevant articles retrieved across all seven databases. The client group focus of the database enabled AgeInfo to achieve a much higher precision than any other database. In order to retrieve the most articles on this topic using a more limited number of databases than those used for this study, a searcher would choose SSCI and Medline as top priorities and AgeInfo and Cinahl as second priorities. In terms of the range and user-friendliness of search facilities, AgeInfo was comparable to the other databases, except for Medline, Cinahl and PsycINFO, which were decidedly superior. AgeInfo may also have uses for the broader purposes of evidence-based practice in terms of scoping the field and providing contextual material to underpin judgements on the application of evidence, but that was beyond the scope of this study.

It would be a valuable development of this project to undertake a similar comparative study:

- involving a research question relating to a different client group
- including a wider range of health and social science databases
- including some additional questions about database facilities.

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Appendix A: Database search formulae

Search formula for AgeInfo

Keywords = 'OLDER PERSONS@'

AND

Keywords = 'ADMISSION [NURSING HOMES]/' 'ADMISSION [RESIDENTIAL HOMES]'

NOT

Keywords = 'TERMINAL CARE@/' 'RATIONAL PROCESSES DISORDERS@'

AND

Year of publication = 1994-2003

Search formula for CareData

(KEYWORDS: (older people) and (assessment/decision making/admission to care)
and (nursing homes/residential care/long term care) and (research))

(YEAR: 1994:2003)

(RECORD TYPE: journal article)

Search formula for Cinahl

1. exp aged/
2. exp needs assessment/
3. (admission\$ adj5 home\$).ti,ab.
4. (institutionali?ation\$ adj5 home\$).ti,ab.
5. (placement\$ adj5 home\$).ti,ab.
6. exp judgment/
7. exp decision making/
8. 1 and (2 or 3 or 4 or 5 or 6 or 7)
9. exp nursing homes/
10. exp long term care/
11. exp residential care/
12. homes for the aged.ti,ab.
13. 9 or 10 or 11 or 12
14. 8 and 13
15. limit 14 to (english and (aged<65 to 79 years> or 'aged <80 and over>') and yr=1994-2003 and (book or book chapter or case study or clinical trial or historical material or journal article or legal cases or research or research instrument or 'review'))
16. *hospices/
17. *learning disorders/
18. *palliative care/
19. *terminal care/
20. 16 or 17 or 18 or 19
21. 15 not 20

Search formula for Medline

1. exp aged/
2. exp needs assessment/
3. (admission\$ adj5 home\$).ti,ab.
4. (institutionalization\$ adj5 home\$).ti,ab.
5. (placement\$ adj5 home\$).ti,ab
6. exp judgment/
7. exp decision making/
8. 1 and (2 or 3 or 4 or 5 or 6 or 7)
9. exp nursing homes/
10. exp long term care/
11. exp homes for the aged/
12. exp residential facilities/
13. 9 or 10 or 11 or 12
14. 8 and 13
15. limit 13 to (english language and ('aging (65 to 79 years)' or 'all aged (65 and over)') and yr=1994-2003 and (clinical trial or controlled clinical trial or journal article or meta analysis or randomized controlled trial or 'review' or review, academic or 'review literature'))
16. *hospices/
17. *learning disorders/
18. *palliative care/
19. *terminal care/
20. 16 or 17 or 18 or 19
21. 15 not 20

Search formula for PsycINFO

1. aged.mp.
2. exp geriatric patients/
3. exp aging/
4. 1 or 2 or 3
5. exp needs assessment/
6. (admission\$ adj5 home\$).ti,ab.
7. (institutionalization\$ adj5 home\$).ti,ab.
8. (placement\$ adj5 home\$).ti,ab.
9. exp judgment/
10. exp decision making/
11. 5 or 6 or 7 or 8 or 9 or 10
12. 4 and 11
13. exp nursing homes/
14. exp long term care/
15. exp residential care institutions/
16. homes for the aged.ti,ab.
17. 13 or 14 or 15 or 16
18. 12 and 17

19. limit 18 to (human and english language and ('380 aged <age 65 yrs and older>' or '390 very old <age 85 yrs and older>') and ('0800 empirical study' or '0820 clinical case report' or '0840 followup study' or '0850 longitudinal study' or '0851 prospective study' or '0852 retrospective study' or '0870 clinical trial' or '0880 qualitative study' or '0890 quantitative study' or '0891 double blind design' or '0892 single blind design' or '1300 literature review' or '1400 meta analysis') and peer reviewed journal and yr=1994-2003)
20. *hospices/
21. *terminal care/
22. *palliative care/
23. *learning disorders/
24. 20 or 21 or 22 or 23
25. 19 not 24

Search formula for Social Science Citation Index

(elder* OR geriatric OR old age OR old* people) AND (admit* OR admission* OR enter* OR entry OR institutionalization OR placement* OR decision* OR judgment) AND (care home* OR residential care OR residential home* OR home* for the aged OR institutional care OR long-term care OR long term care OR nursing home* OR old peoples home* OR old people's home* OR out of home placement*) NOT (hospice* OR learning disabilit* OR mental* disorder* OR mental* handicap* OR palliative care OR terminal care OR terminal illness); DocType = Article, Bibliography, Database Review, Review; Language =English; Databases = SSCI; Timespan = 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003.

Search formula for Social Services Abstracts

KW= (elderly or aging or geriatrics) and KW= (needs assessment) or decision making or admissions) and KW= (nursing homes or long term care or residential institutions)

Year=1994-2003, Limits = English only and journal articles only.

Appendix B: AgeInfo evaluation selection form

Reference

Database(s) S M N C A P Age

Reviewer:

If not title & abstract: F T [F= Full text, T= Title only]

Criteria

- | | | | |
|---|--------------------------|--------------------------|--------------------------------|
| 1. Is the item available in English? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 2. Is the item a piece of research or a review of research in a peer-reviewed journal? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 3. Does the item include a focus on persons aged 65 years or over? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 4. Does the item focus on terminal illness, palliative care or hospice care? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 5. Does the item focus on people with a learning disability or mental health problem? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 6. Does the item contain research focusing on the provision of residential or nursing home care, or on the consideration of providing these services? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 7. Does the item include a focus on the assessment, entry to or decisions (including funding decisions) for such a service? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> → Out |
| 8. Other reason for exclusion: _____ | | | <input type="checkbox"/> → Out |

U (Unable to decide): consult with second reviewer, and third reviewer if necessary.

Include

Appendix C: AgeInfo evaluation selection form guidance notes

1. The full text of the item must be available in English.
2. The article must be original research or a review of research.
 - Exclude items that develop a methodology.
 - Grey literature for example, book, thesis or conference proceedings should be excluded.
3. The focus on persons aged 65 years or older may be apparent in the title or abstract of the article or in the title of the journal.
4. The article would be excluded if the **main** focus of the article is on hospice care, palliative care or terminal illness, but not if it merely mentions these areas.
 - Include studies on illnesses and drugs re their effect on the need for admission.
 - Do not include items that relate to life and health in the institution.
 - Include disease progression, impact and consequences of ageing.
5. As in 4, exclude if learning disability or acute mental health is the **main** focus of the article. However include dementia. 'Psychogeriatric nursing home' is to be treated as the equivalent of 'Elderly mentally infirm' homes and both are to be included, as the primary focus tends to be on dementia. 'Decisional impairment' is also to be included.
6. We want articles that focus on the provision of residential or nursing home care to individuals. 'Formal care' is not always clear in article titles; it may mean home care services as opposed to family care, or it may mean institutional care.
 - Exclude housing and sheltered accommodation.
 - Include home care only in terms of its impact on institutional admission.
 - Hospital discharge is only to be included if there is a significant focus on the decision or process regarding admission to institutional care.
7. Articles that focus on the funding decisions that take place when allocating residential or nursing home care to individuals should be included as should the decisions that the manager of the residential or nursing home would have to make.
 - Include items about 'newly admitted' residents if the study is about their transition (including adjustment), but not if this is simply used as a point in time to study something else. This applies also to the effect on carers due to admission, or before and after admission studies (include), but not otherwise studies that are only after the admission.
 - Include caregiving roles, responsibilities and stresses but only if the study focuses on predicting or deciding about the use of institutional care.
 - Include views and choices of patients and clients relating to admission.
 - Include studies that focus on the decision-making process, including financial decisions.
 - Omit professional attitudes, knowledge, skills and judgements unless relating to how decisions are made about admission to long-term institutional care.

- Omit ethics relating to professional conduct unless relating to how decisions are made.
- Include predicting institutional care including statistical trends in usage, 'risk factors' and effects of preventive services, if related to admission.
- Generally include access to community health and social services if related to admission decisions that are made.
- Include studies of organisational aspects.

8. Include studies relating to schedules, tests and tools where they focus on the admission process. There was no exclusion in the search formula, so it would not make sense to exclude them. To be included the study must tell us something about how the test informs admission to institutional care.

9. Exclude Advance Directives and their implementation.

10. Question 7 gives the overall focus when in doubt: is the article about the admission of an older person to institutional care?

- The fundamental issue is whether the study provides information that would inform decision making about institutional admission.

Systematic searching on the AgeInfo database

Systematic reviews require access to relevant databases and sophisticated searching strategies. SCIE provides free access to AgeInfo as a key resource for work on services to older people and commissioned this report to illustrate issues in searching this database. The findings will be helpful to those using AgeInfo and to information scientists interested in the effectiveness of their searches for relevant research.

This publication is available in an alternative format upon request.