Health services and systems research in Europe: overview of the literature 1995–2005

Diana M.J. Delnoij, Peter P. Groenewegen

Introduction: Our objective, within the collaborative study SPHERE (Strengthening Public Health Research in Europe) is to give an overview of health services and health systems research in Europe, based on a search of the literature in PubMed and Embase.

Method: The method used in this study consisted of: (i) A bibliometric analysis, and (ii) Classification of health services and systems research according to pre-defined criteria for a sample of 500 publications in the PubMed search.

Results: Health services research is particularly strong in the Nordic countries. The number of publications on health services research has increased steadily between 1996 and 2004, 60% of the references found had a keyword related to ‘patient’. More than one-third of the references had a keyword related to ‘hospital’. The keyword ‘general practitioner’ occurred in 16% of the cases. The emphasis on this keyword was higher in those countries where the GP traditionally holds a strong position, but also in the new member states, Estonia and Slovenia. Of a smaller sample classified in depth; 57% addressed problems of efficiency and quality improvement; 27% focused on the organization of health care, cohesion and arrangement of supply according to needs and demands; only 10% addressed problems of inequalities and distribution of services.

Conclusions: Health services research is a growing domain of research. As an applied discipline, health services research can be expected to closely follow political agendas. The majority of studies focus on improving the efficiency and quality of the system. Only 10% of the studies address inequalities in health utilization.

Keywords: bibliometry, Europe, health services research, literature review, public health research

Health care is one of the factors contributing to the health of individuals and populations, along with healthy lifestyles and a healthy environment. Therefore, the study of health care and the services it provides is complementary to, and partly overlaps, with the larger domain of public health research, even if ‘health’ itself is not always the topic of study or even among the set of variables taken into account. Health services research can be defined as ‘the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies and personal behaviours affect access to health care, the quality and cost of health care and ultimately our health and well-being.’

Health systems research is the sub-discipline of health services research that looks specifically at the health care system. A health care system can be defined as the collection of different health units that are organized and financed in order to provide a range of health services to a defined population or nation.

The objective of this article is (i) to give an overview of health services and health systems research in Europe, based on a search of the literature in PubMed and Embase and (ii) to classify health services research according to the problems addressed, the dependent variables studied, the level of analysis and the type of data collected.

Method

The objective of this study is to describe health services and systems research in Europe. Geographically, Europe was defined as the countries belonging to the European Economic Area (EEA), i.e. the 25 EU countries prior to January 2007 plus Iceland, Norway, Liechtenstein and Switzerland. European health care is one of the factors contributing to the health of individuals and populations, along with healthy lifestyles and a healthy environment. Therefore, the study of health care and the services it provides is complementary to, and partly overlaps, with the larger domain of public health research, even if ‘health’ itself is not always the topic of study or even among the set of variables taken into account.

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combined the two, excluding duplicates. (Duplicate counting of references can also occur, e.g. when a reference has more than one country name in the address field, and such duplicates were also excluded).

**Analyses**

We conducted two types of analyses: a bibliometric analysis and a classification of a sample of references according to a pre-defined scheme. The bibliometric analysis took place on the combined PubMed and Embase reference database.

The reference database was built with Reference Manager. The bibliometric analysis was conducted with the Search References option in this programme. References were searched by country, by keyword and by year. Numbers of references were expressed as a rate per country in terms of population (number of inhabitants) and in terms of Gross Domestic Product (GDP).

Further classification of references was undertaken on a small (2%) random sample of the references. These references were reviewed independently by the two authors to answer the questions:

- Does the abstract describe European research? Yes/No
- Does the abstract describe empirical research? Yes/No
- Does the abstract describe health services research? Yes/No

If it described health services research, the study was classified using a scoring form.

The scoring form was developed by the two authors of this article on the basis of a previous study of Dutch health services research. The main categories on the scoring form were:

- Studies of health care organization, cohesion and arrangement of supply according to needs/demands (in short: organization, cohesion and arrangement);
- Studies of inequalities and distribution;
- Studies of efficiency and quality improvement.

Dependent variables studied:

- Utilization and costs;
- Health and quality of life;
- Both;
- Neither.

Level of analysis:

- Micro-level;
- Meso-level;
- Macro-level;
- Multi-level.

Type of data:

- Quantitative data collected for research purposes (new or secondary analyses);
- Qualitative data collected for research purposes (new or secondary analyses);
- Administrative data;
- Documents;
- Literature review;
- Clinical data;
- Combinations/other.

Scoring took place in three rounds. In the first round abstracts of articles clearly not meeting the inclusion criteria were excluded. (e.g. author address New South Wales, not Wales; epidemiological studies; public health research focusing on determinants of health without a link to the health ‘care’ system; clinical research focusing on the development and testing of new diagnostic or treatment procedures; psychological research on individuals coping with disease.)

The two authors reviewed and scored the publications separately. Kappa scores were calculated and scores measuring level of agreement between the two reviewers were acceptable to high (ranging from \( \kappa = 0.72 \) to \( \kappa = 0.90 \)), except for the classification of the main problems addressed (\( \kappa = 0.24 \)).

In the second round, the authors discussed the cases about which they disagreed in order to refine the classification criteria. Some cases of disagreement were the result of simple mistakes; however, the majority led to the definition of additional criteria for classification. Finally, in the third round reviewers reassessed abstracts about which they initially disagreed in order to come to a final classification. Results of this final classification are presented in this article.

**Results**

Figure 1 shows the percentage of PubMed publications on health services research between 1995 and 2005 published in English by a first author based in France, Spain, Germany, Austria, Italy, Switzerland or Belgium.

![Figure 1 Percentage of health services research publications in PubMed published in English between 1995 and2005 by a first author based in France, Spain, Germany, Austria, Italy, Switzerland or Belgium](image)

Of all the references, 60% had a keyword related to ‘patient’. There are large differences in the numbers of references per country, both in absolute as well as in relative figures. If the results are related to population size, Sweden, Finland, Iceland, Norway, Ireland and the Netherlands have high numbers of references. Relative to GDP Sweden and Finland have the highest production, but are followed by Estonia.

**Bibliometric analysis**

The number of publications on health services research increased steadily between 1996 and 2004. The average annual growth rate in this period is +34.9%.

In Table 1, the number of references per country is presented. Data are given in crude numbers, and corrected for the number of inhabitants of a country as well as for GDP.

There are large differences in the numbers of references per country, both in absolute as well as in relative figures. If the results are related to population size, Sweden, Finland, Iceland, Norway, Ireland and the Netherlands have high numbers of references. Relative to GDP Sweden and Finland have the highest production, but are followed by Estonia.

Of all the references, 60% had a keyword related to ‘patient’. This includes, for example, more specific keywords such as
‘patient advocacy’ or ‘patient compliance’. It also includes the keyword ‘patient satisfaction’, which by itself accounts for 15% of the total references. More than one-third of the references have a keyword related to ‘hospital’. The keywords ‘risk’ and ‘education’ occur in 14% of the references; ‘physician’ in 11% each. Over the years studied, the share of most of these keywords remains quite stable, with the exception of the keywords ‘General Practitioner’ and ‘patient satisfaction’ (both showing a declining trend), and the keyword ‘risk’ (showing an increasing trend).

Countries differ profoundly in the emphasis on different keywords within their total set of publications. As an example of these differences, in figure 2 the percentage of publications per country with the keyword ‘general practitioner’ is presented.

In figure 2, it can be observed that the emphasis on the keyword ‘General Practitioner’ is high in those countries where the GP traditionally holds a strong position in the health care system (the UK, Denmark and the Netherlands), but also in the new member states Estonia and Slovenia. ‘Patient satisfaction’ (data not shown in the figure) seems to be more important in the social health insurance systems of Austria, Germany, Belgium and France (but also in Slovenia), and less important in central and eastern European countries. ‘Education’ (data not shown in the figure) receives relatively more attention in many of the new EU member states, perhaps reflecting the fact that their health systems in transition have higher training needs than established systems.

Further classification of references

The first scoring round, using a 2% random sample yielding 500 abstracts revealed 42 abstracts not fitting the inclusion criteria and 36, which did not describe empirical research. The remaining abstracts (n = 422) were reviewed in order to identify studies belonging to the domain of health services research. Of the 422 publications reviewed, 53% (n = 225) were classified as health services research.

Of these 225 publications, 56.9% addressed problems of efficiency and quality improvement (table 2); 26.7% focused on the organization of health care, cohesion and arrangement of supply according to needs and demands; only 9.8% addressed problems of inequalities and distribution of services. About one-third of the studies looked at utilization and/or costs as the dependent variable. However, 56.9% of the publications could not be classified to either of the previously defined categories for dependent variables. In almost half of the studies, the level of analysis was the micro-level (the patient-level general practice

<table>
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<th>Country</th>
<th>Total number</th>
<th>Per 1000 population</th>
<th>Per $1 000 000 GDP</th>
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<td>0.16</td>
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</table>

Figure 2 ‘General practitioner’ as percentage of the total number of references per country
level); in almost a quarter the level of analysis is at the meso-
level (providers, insurers or regions). In more than half
(56.1%) of the studies, quantitative data were collected.
Qualitative data were collected in 15.2% of the studies, and
administrative or clinical data in 7.2% of the studies.

**Discussion**

This article has presented the results of a bibliometric analysis
of health services research and a classification of a small sample
of health services publications according to pre-defined criteria.

The results of the bibliometric analyses have to be
interpreted with caution. Although we expected our search
strategy to have a satisfactory specificity (preliminary searches
indicated that about 30% of our references database would
actually consist of publications that were ‘not’ health services
research), in the final database about 47% of the references
were not health services research, but instead were epidemi-
ological, clinical or psychological research. We based our search
strategy on the 2005 volume of the European Journal of Public
Health. Apparently, the keywords that describe health services
research in this journal are not fully representative of health
services research and health policy is another area in which further
research is warranted.

The topic of inequalities has been addressed in <10% of the
studies. It is unclear to what extent this reflects a political reality
or an implicit ‘division of tasks’ between public health research/
epidemiology and health services research, with social inequal-
ities in health and health care being addressed in the former
domain. However, based on the classification of topics studied,
we come to the tentative conclusion that health services and
systems research tends to overemphasize the importance of
doing things right (quality and efficiency), perhaps at the
expense of doing the right things (arrangement/cohesion) for
the right people (inequality). In this respect, health services
research might benefit from a public health perspective.

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Switzerland, 16 November 2006.

**Conflict of interest:** None declared.

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