

## 3 Health Systems Research in Europe

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### 3.1 Introduction – Health Systems

Europe's health care decision makers are facing an increasingly complex and rapidly changing landscape. One of the most prominent developments is the continuous aging of the population which implies that the demand for care for the elderly, in particular long term care and palliative care, will probably substantially grow. Non-communicable diseases and in particular chronic illnesses have become the main sources of burden of disease (World Bank, 2006). It also implies greater emphasis on the need to strengthen preventive care in order to relieve some of the pressure of the health system in later stages and to ensure that sufficient numbers of people will remain active and in good health at higher age.

The same demographic developments will imply a considerable shift in the workforce, with from 2020 onward fewer and fewer people in the working population – if migration does not increase – able to ensure our future prosperity (EC DG-ECFIN, 2009).

A second challenge on countries' health care system is the high spending on health care, which generally is rising faster than economic growth (OECD, 2010). In many countries, a debate is ongoing how to realise major cuts in the health care system, even though health spending has only recently been recognized as an investment, contributing to the health and wealth of Europe (WHO European Ministerial Conference on Health Systems, 2008). At the same time, for-profit providers are growing in the health care arena, which implies that an increasing amount of health care expenditure is not being spent directly on health services but on profit paid out to share-holders.

With this increasing pressure on public finances, one particular element that remains high on the European agenda is the solidarity of the health system, ensuring that vulnerable groups such as the chronically ill, lower incomes or different ethnic groups do not suffer unevenly and that any health inequalities, for example in terms of access of the health care system, are reduced rather than increased (European Commission, 2007).

In this context it is of great value to recognise and adopt technological as well as organisational innovations that can help make health care more effective and efficient. As for organisational changes (i.e. health care reforms), a number of developments are taking place, the consequences of which on health care, including its quality and cost, are not always sure. Examples are the growing emphasis on privately owned health care provision, the shifts in health insurance (towards competition in some countries and centralization in others), the introduction of co-payments, or the organization of care for chronic illnesses around disease management programmes.

These problems are faced by many European countries and call for more empirical evidence on both intended and unintended consequences of different types of action. Especially in times of scarcity it is crucial that health care problems are addressed with evidence informed policy and that evidence finding is aimed at those topics most urgent on the current policy agendas.

Within health services research, health systems research addresses the macro level of health care, i.e. the level of nations or regions, and the issues related to the organizational structure, the model of financing, the regulation and planning of the system, the ways to create physical and human resources and to provide services, as well as it changes over time.

According to the definition provided by the European Observatory on Health Systems and Policies –

which draws on the World Health Report 2000 (World Health Organisation, 2000) – a health system consists of all the

*“people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people’s legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent is to improve health.” (European Observatory for Health Systems and Policies, 2007)*

This definition acknowledges what the WHO has defined as the fundamental goals of a health system (World Health Organisation, 2000), namely:

- to improve the health of the population they serve,
- to respond to the wishes and expectations of individuals about how to be treated, and
- to provide financial protection to individuals against the costs of ill-health.

Additionally, the definition above covers a plurality of professions and institutions being part of a health system as well as a broad range of activities to promote, restore and protect health. A health system includes health care of ailing individuals, ranging from the informal care provided by relatives to the highly specialised and technologically advanced medical care delivered in tertiary hospitals. It also includes actions targeting whole populations, ranging from educational campaigns to public health laws and other kinds of interventions explicitly or predominantly intending to protect the health of populations, such as environmental protection, workplace safety, or food and water safety policies. In this line, the Tallinn Charter on Health Systems adopted by the WHO European Ministerial Conference in 2008 indicates that health systems

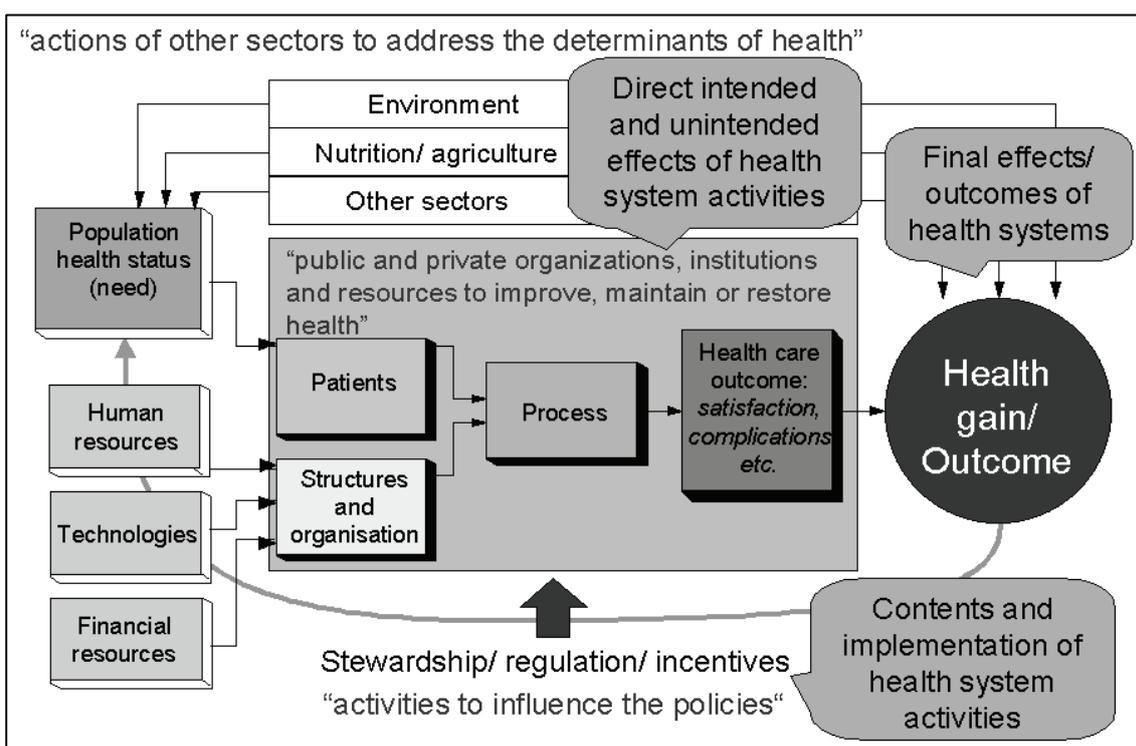
*“ensemble all public and private organizations, institutions and resources mandated to improve, maintain or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.” (WHO European Ministerial Conference on Health Systems, 2008)*

This Charter also stresses that health systems are more than health care and includes health promotion and any other efforts to influence other sectors to address health concerns in their policies (WHO European Ministerial Conference on Health Systems, 2008). In most countries, the majority of financial and workforce resources available to address health-system goals are, however, committed to the organization and delivery of preventive, curative, rehabilitative and palliative services, i.e. to the health care system. A health care system has been defined as the arrangements, individuals and institutions through which personal health services are provided, organized, and controlled (Myers, 1986). It is characterised by a formal structure, whose finance, management, scope and content is defined by law and regulations and aims at delivering health services (in the primary, secondary and tertiary sectors, as well as at home) to a defined population (European Observatory for Health Systems and Policies, 2007).

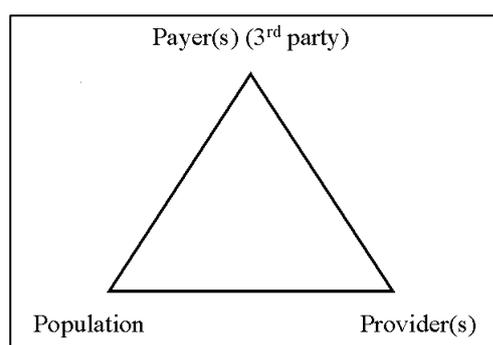
This is to a certain extent contradictory with the OECD System of Health Accounts, which divides expenditure on personal health care services and goods (HC.1-HC.5 in the classification) from that on collective health care services (with the latter encompassing both prevention and public health services incl. e.g. occupational health care [HC.6] and health administration and insurance [HC.7]), i.e. which uses the term “health care” for both (notwithstanding other topics regarding the division, e.g. that certain services of mother and child health may also be classified as personal) (OECD, 2000).

### 3.2 Frameworks for Health System Research

There are several manners to approach health systems and health care systems in the context of research, all of them sharing that they put the main focus on the macro-level. Mainly there are two models established in health (care) system research: a health production model, which is especially appropriate to assess the performance of the system (see Figure 3.1) and a triangular model, which is very suitable to describe and compare the organisational, financial and governance arrangements of the system (focussing on health care/ personal health services; see Figure 3.2) (Busse, 2006).



**Figure 3.1 Health Production Model for Health Systems Research**



**Figure 3.2 Triangular Model for Health Systems Research**

The European Observatory on Health Systems and Policies structures its analysis of health systems (HiT profiles) into the categories organizational structure, regulation and planning, financing, physical and human resources, provision of services, principal health care reforms and assessment of the health system (Mossialos et al., 2007). In our view, this structure integrates the

two models briefly presented above in a practical manner by relating to the functions of health systems described above.

The topics addressed within health systems research or health care systems research can be identified with the help of the models described before and can be systematized along the four functions of modern health systems (based on (1) and later modifications):

- Service delivery/provision (supply/ availability and utilization of primary, secondary ... care etc.);
- Financing & health expenditure (resource mobilisation, pooling, allocation, purchasing, provider payment – Incentives, equity/ fairness ...);
- Resource creation (infrastructure, human resources, technologies/ goods...);
- Stewardship/ governance (decentralization/centralization..., access).

Alternatively, topics can be arranged according to the building blocks of the health production model (cf. Figure 3.1):

- Inputs<sup>1\*</sup>: health needs & demand on the one side; financial resources, supply/availability of human resources (work force), infrastructure/ technologies (e.g. beds, pharmaceuticals, medical devices, etc.) as well as their organization and structure on the other;
- Processes\*: Access (population coverage, benefit coverage/ entitlements, waiting times ...), Utilisation (numbers, appropriateness, equity ...);
- Outputs and outcomes\*: satisfaction, health.

Any of the topics can be studied following a more descriptive approach (e.g. status quo, evolution over time) or a more analytic one (e.g. trying to establish causal relationships between topic and health outcomes or satisfaction). Some studies may focus on single countries, others may address international comparisons – the most prominent characteristic of health system research being its focus on the macro-level (i.e. at the level of nations or regions).

One proposal on types of studies that can be conducted within the overarching topic of health (care) systems research has mentioned –for each of the above mentioned building block topics– (Delnoij & Groenewegen, 2007):

- studies of the organization, cohesion and arrangement of health care supply according to the demands/needs of the target population;
- studies of inequalities (e.g. distribution of goal achievement);
- studies of the efficiency and quality (studies of the performance).

### 3.3 Objective of the Assessment Report

The objective of this assessment report is to provide a general overview of the principal areas of research on health systems in Europe, based mainly on an analysis of published literature. Special focus will be given to the countries of the European Union and the European Economic Area (EEA).

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<sup>1</sup> \* Issues of structural, process and outcome quality on the system level are disregarded here as they will be dealt with in a separate chapter.

## 3.4 Methods

Based on a literature search, a bibliometric analysis was performed in order to provide an estimation of the field of health systems research in Europe. After providing definitions relevant for the assessment, we describe the approach followed, which was similar to the one followed in the SPHERE-Project (Delnoij & Groenewegen, 2007).

### 3.4.1 Preliminary Definitions

#### 3.4.1.1 Definition of Europe

For the purpose of this study we considered “Europe” as the countries listed as members of the European Region of the World Health Organisation (see Box 3.1). In more detailed analysis we only focus on the countries of the European Union (as of 2010) and of the European Economic Area.

<b>Box 3.1 Countries belonging to the European Region of WHO (Source: <a href="http://who.euro.who.int/countryinformation">http://who.euro.who.int/countryinformation</a>)</b>		
Albania	Greece*	Republic of Moldova
Andorra	Hungary*	Romania*
Armenia	Iceland#	Russian Federation
Austria*	Ireland*	San Marino
Azerbaijan	Israel	Serbia
Belarus	Italy*	Slovakia*
Belgium*	Kazakhstan	Slovenia*
Bosnia and Herzegovina	Kyrgyzstan	Spain*
Bulgaria*	Latvia*	Sweden*
Croatia	Lithuania*	Switzerland#
Cyprus*	Luxembourg*	Tajikistan
Czech Republic*	Malta*	The Former Yugoslav Republic of Macedonia
Denmark*	Monaco	Turkey
Estonia*	Montenegro	Turkmenistan
Finland*	Netherlands*	Ukraine
France*	Norway#	United Kingdom of Great Britain & Northern Ireland*
Georgia	Poland*	Uzbekistan
Germany*	Portugal*	

\*EU countries; #non-EU EEA countries (Liechtenstein is part of the EEA but not listed in WHO-Europe)

#### 3.4.1.2 Definitions of health system topics

Setting out from the accepted definitions of health system summarized above, we identified four thematic areas for health systems research. Each of the thematic areas covers a set of topics which can be the object of health systems research (see Box 3.2). More detailed descriptions of the areas and topics are provided below. The definitions used here were mainly taken or adapted from the Glossary of European Observatory for Health Systems Research and Policies (European Observatory for Health Systems and Policies, 2007) – where this is not the case, it will be indicated.

### Box 3.2 Areas and topics of health systems research

Service delivery/provision	Availability, supply Accessibility access Acceptability Coverage, benefit basket/ package, entitlements Waiting time, waiting lists Utilization Responsiveness, Satisfaction
Financing/Expenditure	Financing Funding Payment of providers Reimbursement Purchasing Allocation Equity/Fairness
Resource creation	Professional education Research and Development Innovation management Knowledge generation and management Public health intelligence
Stewardship/Governance	Planning, Health Plans Health Policy, Policy Making, Health Care Reform Centralization/Decentralization/Devolution Privatisation/Recommunalisation Commissioning Licensing Accreditation Contracting

#### *Services delivery/provision (input/process)*

Health services are any services which can contribute to improved health or the diagnosis, treatment and rehabilitation of sick people and are not necessarily limited to medical or health-care services. They include primary, secondary and tertiary care as well as services delivered.

Regarding health services (and goods), the system perspective can address the description and/or analysis of problems regarding the

- **Availability, supply:** identifies the presence or absence of needed health care services
- **Accessibility, access:** the extent to which people are able reach appropriate health services; it can be distinguished between financial, geographical and cultural accessibility (the latter related to acceptability) of available health care services
- **Acceptability:** degree to which a service meets the cultural needs and standards of a community, which in turn affects utilisation of that service
- **Coverage, benefit basket/ package, entitlements:** overlapping concepts as “coverage” is viewed as three-dimensional – the “who” (breadth or “population coverage”), the “what” (depth or “benefit coverage”, to which insured or citizens are entitled) and the “how much” (extent, i.e. taking issues such as coinsurance, deductibles, copayments into account)<sup>2</sup> ; all three dimensions are related to access.

<sup>2</sup> The objective to fill all three dimensions can be for example seen in the NHS principles: universal (first dimension), comprehensive (second dimension), and free at the point of service (third dimension)

- **Waiting time, waiting lists:** The time which elapses between 1) the request by a general practitioner for an appointment and the attendance of the patient at the outpatients' department, or 2) the date a patient's name is put on an inpatients' list and the date he is admitted. Waiting lists: the number of people awaiting admission to hospital as inpatients or to appointments for ambulatory care. Can be seen as an aspect of access.
- **Utilization:** the number of health services used, often expressed per 1000 persons per month or year.
- **Responsiveness, Satisfaction:** overlapping concepts, with responsiveness defined as how the health system performs relative to non-health aspects, i.e. meeting or not meeting a population's expectations of how it should be treated by providers of prevention, care or non-personal services, while satisfaction also includes the health aspects.

***Financing / Expenditure = the process to collect/raise funds and to put them at the system's disposal (through pooling, allocating, purchasing, etc.) (World Health Organisation, 2000):***

According to the triangular model of health system research, it can be studied how the following interrelated aspects (i.e. keywords) are arranged:

- **Financing:** Raising revenue/ financial resources to pay for a good or service – may be broken down into public (taxation, contributions) & private (voluntary health insurance premiums, out-of-pocket [OOP] payments) or pre-paid (taxation, contributions, premiums) and at point of service (OOP)
- **Funding:** Providing health care organizations with the financial resources required to carry out a general range of health-related activities.
- **Payment of providers:** The allocation of resources (usually money) to health sector organizations and individuals in return for some activity (e.g. delivering services, managing organizations). There are different models of payment e.g. capitation, fee-for-service, prospective payments, DRG, etc.
- **Reimbursement:** Refers primarily to the activity of compensating health professionals for their time and effort in providing care (even though it is also used in the payment of institutions, e.g. "hospital reimbursement").
- **Purchasing:** Buying of health care services from providers. A proactive approach defines what to purchase, how and from according to health needs assessments of a population. On the other side of spectrum, its most passive form is the mere reimbursement of providers for services delivered (Robinson et al., 2005).
- **Allocation:** Primarily any process by which financial resources flow from a third-party payer (e.g., government, insurer, etc.) through the health care organization to the individual clinical provider; also used to describe processes by which financial resources flow from the pooler to the third-party payer/ purchaser.
- **Equity/Fairness:** There are two kinds of equity: horizontal equity is the principle that says that those who are in identical or similar circumstances should pay similar amounts in taxes (or contributions) and should receive similar amounts in benefits; vertical equity is the principle that says that those who are in different circumstances with respect to a characteristic of concern for equity should, correspondingly, be treated differently, e.g., those with greater economic capacity should pay more; those with greater need should receive more.

***Resource creation (input) = the basic inputs to production of health in the health system:***

Here we refer to time and abilities of individuals (human resources) as well as capital (financial resources). The latter are transformed into facilities, equipment, etc. which is raw materials such as

land and natural resources (air, water, minerals, etc.), transformation and accumulations of these into capital (facilities, equipment) and knowledge production processes (technologies). Some of the keywords/ aspects described under Services Delivery/ Provision and Financing can be considered to be related to resource creation. Additional aspects / keywords include:

- **Professional education**
- **Research and Development**
- **Innovation management**
- **Knowledge generation and management**
- **Public health intelligence:** e.g. health needs assessment, surveillance, health reports, health accounts information systems...

*Stewardship/Governance = a function of government responsible for the welfare of the population, and concerned with the trust and legitimacy with which its activities are viewed by the citizenry:*

Stewardship involves oversight of all other functions and thus is relevant for the performance of a health system in all kind of outcomes. Stewardship may have several aspects:

- **Planning, Health Plans:** A broad term for all kinds of public or private schemes of health care coverage, including, for example, national health systems, sickness fund schemes, and private health insurance schemes
- **Health Policy, Policy Making, Health Care Reform:** A formal statement or procedure within institutions (notably government) which defines priorities and the parameters for action in response to health needs, available resources and other political pressures. Besides addressing aspects under the other subheadings, health policy/ reform can also deal with:
  - **Centralization/Decentralization/Devolution**
  - **Privatisation/Recommunalisation**
- **Commissioning:** A government or public sector function that involves the development of national (regional) health strategy and its implementation through a wide range of public health functions including both health care services and as intersectoral strategies (Robinson et al., 2005).
- **Licensing:** The establishment of legal restrictions defining which individuals or (institutions) have the rights to provide services or goods (usually based on meeting minimum requirements); also used for technologies (i.e. may to be used in the health system, which may not be equal to being reimbursed, i.e. covered in the benefit basket).
- **Accreditation:** The process by which an authorized agency or organization evaluates and recognises an institution or an individual according to a set of “standards” describing the structures and processes that contribute to desirable patient outcomes.
- **Contracting:** Negotiating agreements between payers and providers regarding payments and services to be delivered.

### **3.4.2 Literature Analysis**

#### **3.4.2.1 Databases**

We searched the databases Pubmed and EMBASE, for the period between 1st of January 2004 and 1st of January 2010. Pubmed is provided by the US National Library of Medicine and it is accessible via the internet ([www.pubmed.org](http://www.pubmed.org)). EMBASE is a database provided by the Elsevier Publishing-Group. We accessed EMBASE via the Ovid-SP Platform.

#### **3.4.2.2 Development of Search Strategy**

The search strategies were first developed for Pubmed and then – after having found a strategy

delivering an acceptable degree of estimated specificity and a manageable number of hits – applied to EMBASE.

In a first step, 4 strategies were developed to address the four thematic areas of “Service delivery/provision”, “Financing/Expenditure”, “Resource creation” and “Stewardship/Governance” identified previously (see Box 3.2). For each of these thematic areas, the search strategy consisted on the combination of the topics listed in Box 3.2 with the with the Boolean operator “OR”. Terms were searched both as free-text and as MeSH terms<sup>3</sup>. The searches were limited to the set of European countries defined above (see Box 3.1) adding the terms Scotland, Wales, Northern Ireland and England<sup>4</sup>. In addition the search was limited to publications with abstract and dealing with “Human”. With the aim of increasing specificity for identifying health systems research, a further search phrase including variations of the terms “Health System”, “Health Services” and “Health Policy” was added to the strategy<sup>5</sup>. The resulting search strategy was estimated to have a very low specificity<sup>6</sup>, i.e. it retrieved a very high amount of in-vitro or clinical research.

Thus the search strategy was refined by focusing on MeSH terms and abandoning free-text entries. Such a restriction has been also used previously in the SPHERE project (Delnoij & Groenewegen, 2007). For each topic, relevant MeSH terms were identified with the help of the MeSH term search engine of Pubmed. The conversion of the topics identified into relevant MeSH is documented in Appendix 2A. After removing duplicate MeSH (some topics lead to the same MeSH term) a total of 30 entry MeSH terms were applied.

The final search can be summarized as having three major modules as illustrated in Figure 3.3: one contents module including the MeSH terms, one module for European countries and one “restriction” module, the three being combined with the Boolean operator “AND”. The restriction module included the terms “health system”, “health care system” and “healthcare system” with the aim of enhancing specificity of the search strategy for health systems research. As already mentioned, the search was additionally restricted to items with abstract and research with humans.

For the search in the database EMBASE the search terms identified in Pubmed were applied as search entries. Both the Pubmed and the EMBASE search are documented in the Appendix (Appendix 2B and 2C respectively).

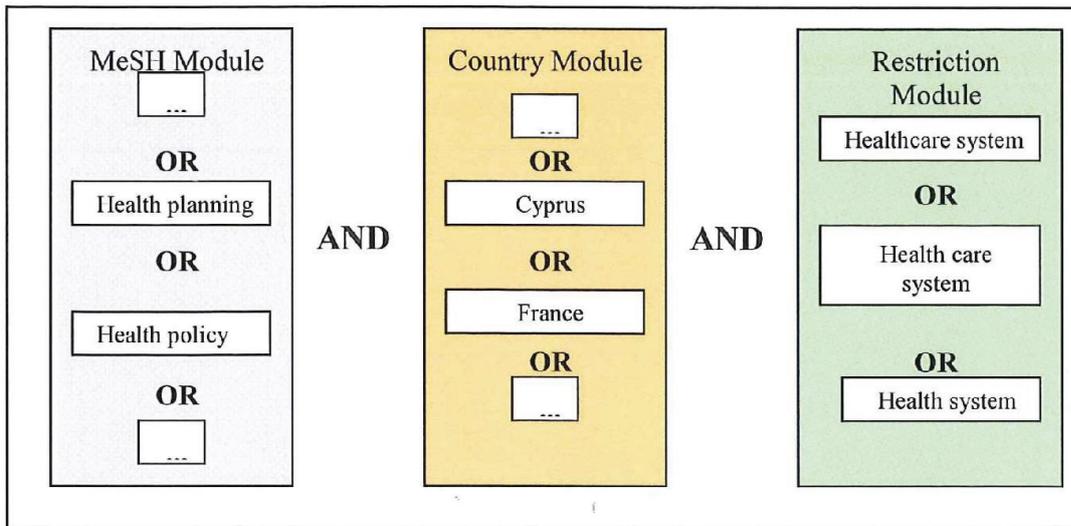
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<sup>3</sup> The Pubmed search engine automatically checks whether there is a MeSH Term for the text entered and if so automatically performs the search in the Field “MeSH Terms” and additionally in “All fields”. When a MeSH term does not exist, the Pubmed search engine automatically performs a free-text search in “All fields”.

<sup>4</sup> The countries were combined with the Boolean operator “OR” and then this module was combined with the thematic modules with the Boolean operator “AND” for restricting to papers with European content.

<sup>5</sup> The terms were combined with the Boolean operator “OR” and the resulting search phrase added to the content and country modules with the Boolean operator “AND”.

<sup>6</sup> After a speedy review of the first 100 retrieved articles it was estimated that at least 65% of the articles were not reporting health system or health services research.



**Figure 3.3 Illustration of search strategy**

#### **3.4.2.3 References Database**

We built a bibliographic database containing the references retrieved from Pubmed and from EMBASE. The database was built with the software Reference Manager®. Duplicate references were removed both using the duplicate search function of the software and manually.

#### **3.4.2.4 Bibliometric Analysis**

Reference counts were performed with the search function of Reference Manager®. This function allows performing searches for single terms or combinations of several terms in both single database fields or in combinations of several fields. Combinations of search terms and fields to be searched are defined with the Boolean operators “AND”, “OR” and “NOT”. Data were entered in Excel® for analysis and production of graphical representations.

#### **Time**

We analyzed the number of references per year based on a search in the “year” field. Cumulative number of references was calculated for the period 2004-2009 (i.e. excluding references from 2010, since only some references from the first weeks of that year could be identified in the search).

#### **Country**

We analyzed the number of references per country based both in a search of the “address” field and in a search of a combination of the fields “titles”, “abstract” and “keywords”. The address field contains information regarding the authors’ institutional affiliation including the country where the institution is based. Searching only the address field provides an estimation of the research produced in a country, without consideration on which countries the research has focused. In contrary, searching the fields “titles”, “abstracts” and “keywords” allows to estimate research regarding a country, since in order to be counted, the country needs to be mentioned in either the publication’s title, in the abstract or as a keyword. Thus both searches represent different kinds of information. Assuming that both searches deliver reliable information (e.g. that all research on a country has been at least identified through keywords), we estimated the amount of research from a country having this country itself as topic by merging both searches with the Boolean operator AND.

Percentages were calculated for each parameter.

Besides absolute numbers of references per country the number of references per 1,000 population and per 1,000,000,000 (billion) USD gross domestic product (GDP) were also calculated. For these calculations, data from the World Bank (World Bank, webs site) were used. We calculated the average population and the average GDP for the period 2004 to 2008.

### *Language*

The distribution of publication languages was estimated by searching the field Notes. This field contains – among other – information on the publication language. We searched for national languages spoken in Europe and report those being present in at least 1% of the publications.

### *Keywords*

Analysis of the Keywords used to describe the publications was made using the Item Lists function of Reference Manager. Absolute numbers of all keywords contained in the database were calculated in order to identify the ten most frequent content keywords (i.e. referring to research topics and not to methods, specific drugs, countries, etc.). Following the framework presented in Box 3.2 we grouped keywords into thematic clusters in order to estimate which topics of health systems research have been studied most often (cf. Appendix 2D). Comparisons per country were made, reporting the proportion of publications “from” and “on” a country containing keywords of the identified thematic areas, for the countries of the EU, EEA and additionally Israel and Turkey.

#### *3.4.2.5 Abstract Analysis*

A random sample of 1000 publications (3.7% of the database) was drawn for more detailed analysis of the abstracts. The sample was stratified by years, i.e. the year distribution of the database was kept in the random sample. Random sequences were obtained for each year with an online Random Sequence Generator ([www.random.org/sequences/?mode=advanced](http://www.random.org/sequences/?mode=advanced)).

For the analysis of references we followed a similar approach as the one described for the SPHERE project (Delnoij & Groenewegen, 2007) classifying the abstracts according to its origin, whether they reported research and whether they reported research on health systems. The database entries (title, abstract, keywords, and address) of the sample were first classified according to its origin into one of the following categories:

- European research (research with an European country in Address field)
- European research focusing on non-European countries (research with a European country in Address field reporting research on other countries in the title or abstract)
- non-European research (research with exclusively non-European countries in the Address field).

In a second step, abstracts reporting European research (first two categories) were further classified depending on whether they reported research or not. We considered an abstract as reporting research when it reported the collection of quantitative or qualitative data, including systematic reviews, papers based on document analysis or descriptions of policies or reforms. We considered papers reporting the results of consensus conferences, guidelines or personal views on a topic as not being research.

Finally the papers reporting research were classified into health systems research or non health systems research. Health system research can be considered as the field in health services research which focuses on the macro-level (i.e. supra-national, national or regional level). We

considered abstracts as reporting health system research when they described supra-national, national or regional health system features or policies or analysed its effects (e.g. on population groups, on types of organisations) and addressed topics related to the ones listed in Box 3.2.

For the pool of abstracts reporting health system research, we analysed the topics addressed (according to keywords<sup>7</sup>), the scope (international comparison<sup>8</sup> or not), the type of research (descriptive or analytical<sup>9</sup>), the methodological approach (quantitative data, qualitative data, document analysis, literature review) and, if available, the type of dependent variable<sup>10</sup> (health outcomes, utilization or costs, satisfaction, quality of care).

### **3.4.3 Internet Search**

Besides the literature analysis, we also conducted internet searches in order to provide an additional perspective for this assessment report. Two internet-based searches were conducted, one aiming at mapping health systems research in European countries through the internet and the other one aiming at identifying international health systems research projects.

#### **3.4.3.1 Internet Google® Search**

The Internet was searched using Google®. We used the advanced search tool ([http://www.google.com/advanced\\_search?hl=en](http://www.google.com/advanced_search?hl=en)) introducing the search terms “health system research” and “health systems research” as exact phrases. In order to assess geographical distribution we conducted separated searches for each relevant country (see Box 3.1) using the search field “Region” of the advanced search tool for limiting the search according to the location of the websites. For each country two separated searches were conducted, one for each of the search phrases. The searches were conducted on 6th and 7th of October 2009.

Results are presented as counts of hits per country. In addition to the absolute numbers of hits for each country we also calculated the number of hits per 1,000 population and per 1,000,000,000 (billion) USD gross domestic product (GDP). For these calculations, data from the World Bank (World Bank, webs site) were used. We calculated the average population and the average GDP for the period 2004 to 2008.

#### **3.4.3.2 International Project search**

We conducted a search in the project database CORDIS. This is a web-based, searchable database containing the majority of projects funded by the EU since 1990 (Source: <http://cordis.europa.eu/search/index.cfm?fuseaction=proj.advSearch>). We searched this database from January 2000 till the date of search (October 2009). We used combinations of the search terms “health system”, “health systems” and “research”. The search was restricted to the period 1st of January 2000 to date of search.

The results were analysed in order to determine which topics and which countries have been object of study or have participated in EU funded health services research.

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<sup>7</sup> see above

<sup>8</sup> A study addressing more than one country was considered an international comparison.

<sup>9</sup> Descriptive: papers mainly reporting policies, policy developments, describing whole health systems or single aspects of them. Analytical: when attempts have been made to assess the effects of policies, of organisational features of the system, etc. on some type of indicator/outcome (e.g. health, costs, utilization, etc.).

<sup>10</sup> If any reported. In studies describing policies or features of health system without analysis of effects we do not expect any dependent variable reported.

### **3.4.4 Additional Information Sources**

#### **3.4.4.1 Country Experts Consultation**

A questionnaire was sent to country consultants from all European Union Member States as well as Croatia, Iceland, Macedonia, Norway, Switzerland and Turkey. Among other the questionnaire included open questions relevant for mapping health systems research across Europe. Consultants were asked to list the research priorities regarding health systems which have been identified or discussed by local policy makers. They also were asked to identify institutions specifically dedicated to health systems research. Details on the selection of country consultants and on the contents of the questionnaire are provided elsewhere (see Chapter 2 and Chapter 7).

#### **3.4.4.2 Online Survey**

During the pre- and post-conference<sup>11</sup> period an online survey was active to gather the views from researchers and policy-makers. The survey included among others questions regarding the research priorities on health systems. Participants were asked to agree/disagree with proposed research areas and topics as priority areas. The list of topics used for health systems research was the one identified previously (see Box 3.2). Details on the online survey are provided elsewhere (see Chapter 2).

#### **3.4.4.3 Workshop with health system researchers**

The framework for health systems research and the results of the bibliometric analysis were presented at the Health Services Research Working Conference in Den Haag (8th and 9th of April 2010) and discussed with the participants in working sessions. For the working session on health systems, three specific areas for discussion were identified previously based on the results of the bibliometric analysis and on the abstracts submitted by participants<sup>12</sup>. The three areas of discussion identified previously were: methodological aspects of health systems research, evaluation of privatization and market competition in the health systems and issues of workforce planning and professional mobility.

## **3.5. Results**

### **3.5.1 Literature Analysis**

#### **3.5.1.1 References Pool**

The database search resulted in a total of 27994 hits in the Pubmed database and a total of 2935 hits in the EMBASE database. Although we limited our search to European countries in the address fields, papers from non-European countries are still possible to be retrieved. For example, it has been previously reported, that searching for “Wales” may result in the identification of publications from Australia (namely from New South Wales) (Delnoij & Groenewegen, 2007). Similarly, searching for Georgia or England may result in the identification of publications from the USA (i.e. from Georgia State or New England). Additionally the address fields may include European country names as part of an institution’s name outside Europe (e.g. Beth Israel Hospital). Thus, we removed papers indicating Australia, Canada or the USA in the address field without a European nation. After excluding publications from these countries and removing duplicates a final pool of 26945 remained for the bibliometric analysis.

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<sup>11</sup> Health Services Research European Working Conference, Den Haag, 8<sup>th</sup> and 9<sup>th</sup> of April 2010.

<sup>12</sup> Participants in the conference had had the opportunity to submit abstracts on their research. However, during the conference, the abstracts were not orally presented but served as a tool to identify emerging topics.

A total of 197 references had a false publication year coded in the year field, but could be corrected manually since this data was available from other fields (e.g. Notes field). A total of 663 references had an empty address field, which could not be repaired.

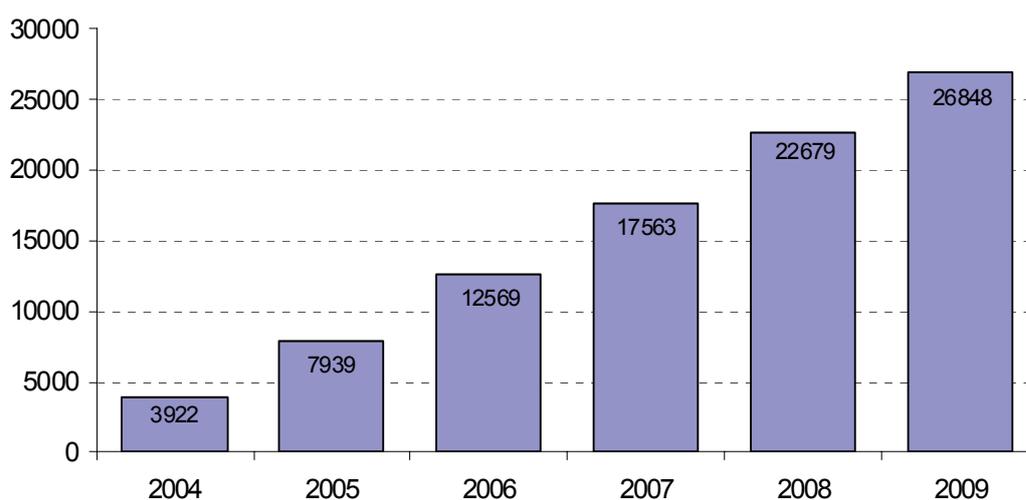
A sample of 1000 (3.7% of the total pool) references was drawn from this pool for more detailed abstract analysis (see below).

### 3.5.1.2 Bibliometric Analysis

The per year number of publications on health systems research increased yearly between the years 2004 and 2008 at an average growth rate of 5.2%. However, there was a decrease between 2008 and 2009 of 18% (see Table 3.1). This negative difference between 2008 and 2009 could be due to an incomplete documentation of the 2009 publications in the databases at the time we conducted the searches (beginning of 2010). The cumulative number of references between 2004 and 2009<sup>13</sup> is presented in Figure 3.4). The overall number of references in 2009 is nearly 7-fold the number of references published in 2004.

**Table 3.1 Distribution of publications over time**

Year	No. of publications	% of database	Absolute difference to previous year	% difference with previous year
2004	3922	14.6%	-	-
2005	4017	14.9%	95	2.4%
2006	4630	17.2%	613	15.3%
2007	4994	18.5%	364	7.9%
2008	5116	19.0%	122	2.4%
2009	4169	15.5%	-947	-18.5%
2010	97	0.3%	-	-
	26945	100%	-	-



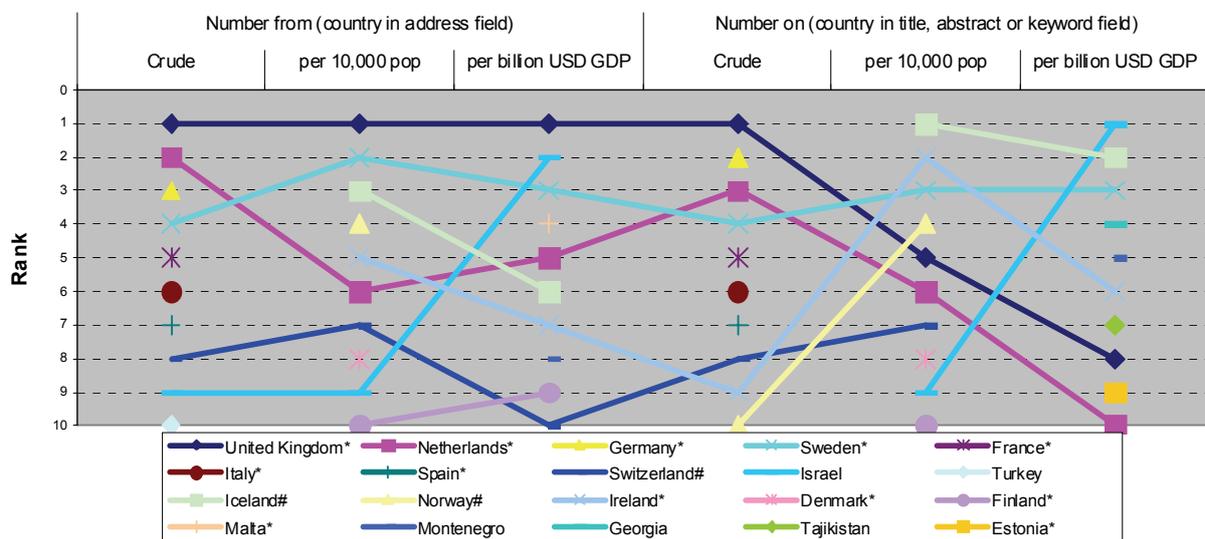
**Figure 3.4 Cumulative number of references 2004-2009**

<sup>13</sup> The year 2010 was excluded because only a few weeks were included in the literature search and only for the EMBASE search, since for this database it was not possible to define the time period as accurately as with Pubmed which allows to entry day and month to limit searches.

Regarding the absolute number of references per country for all the member countries of the WHO European Region we considered the address field to estimate the number of citations from a country and the title, abstract and keywords field to estimate the number of papers reporting research on a country. A summary of these results is provided in appendix 2E. There were 3 countries (Andorra, Monaco, San Marino) which neither had produced any research nor had been object of any research. Four countries, all of them republics of the former Soviet Union (Belarus, Kyrgyzstan, Tajikistan, Turkmenistan), had produced no research but at least had been object of some research. Among the countries which had produced research, the amount of published papers differs largely, ranging from 1 to 9979 (median 44). There are also major differences regarding the number of papers reporting research on a country, ranging from 2 to 7894 (median 64.5). According to absolute numbers the biggest producer of research on the topics of our literature search was the UK, which was mentioned in the address field of 37% of the publications. The UK was also the country which was object of research most frequently: 29% of the publications mentioned this country either in its title, abstract or keywords. The wide ranges for both research produced and research focusing on a country remain after correcting for population or GDP (see Appendix 2E).

However, adjusting for population and GDP leads to several shifts in the ranking of the first ten countries, especially regarding research on a country (see Figure 3.5). Only four countries rank among the ten highest for all parameters (UK, Israel, Netherlands and Sweden). Germany, France and Spain, which show high absolute numbers for both “research from” and “research on” the country, rank much lower when adjusting for population or GDP.

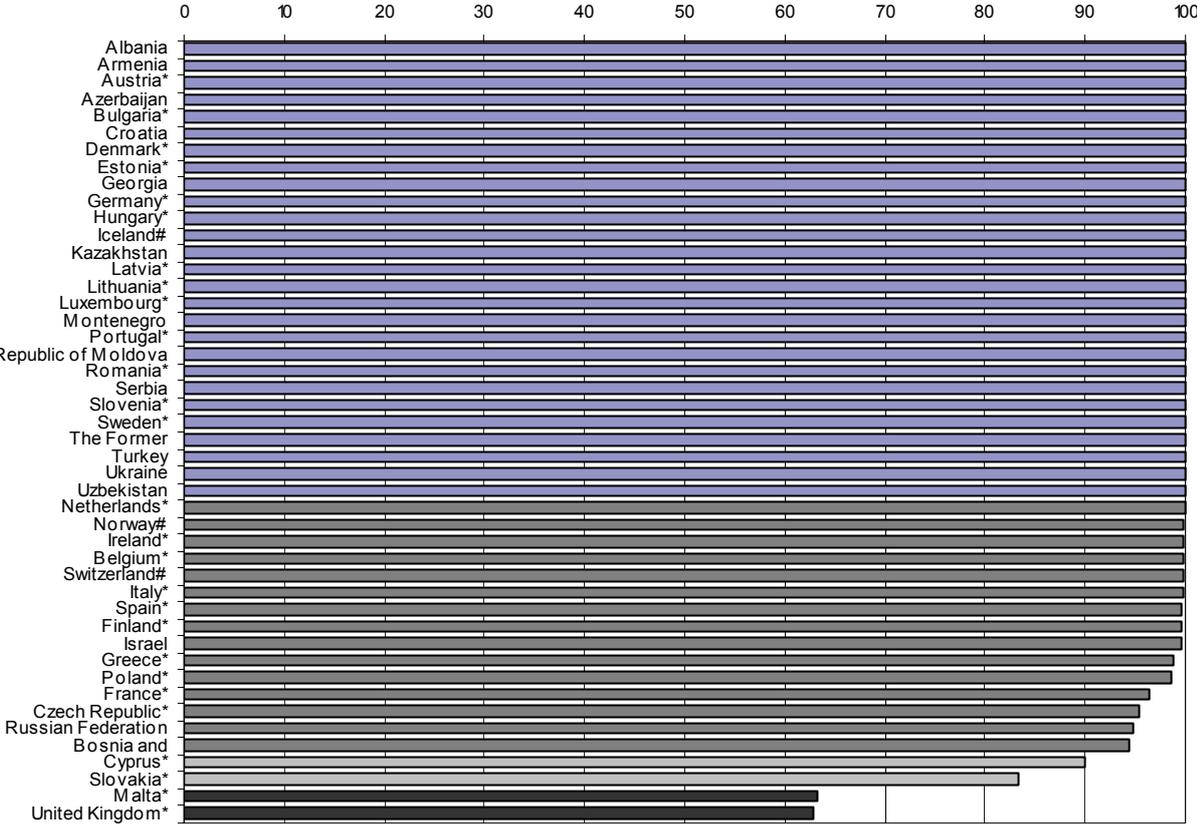
There is a moderate correlation between the number of publications from a country and its GDP ( $r=0.62$ ) and between the number of publications addressing a country and its GDP ( $r=0.74$ ). The correlation of both publication parameters with the country population is much lower ( $r=0.33$  and  $r=0.41$  respectively).



**Figure 3.5 Rankings of top 10 countries, crude and adjusted for population and GDP**

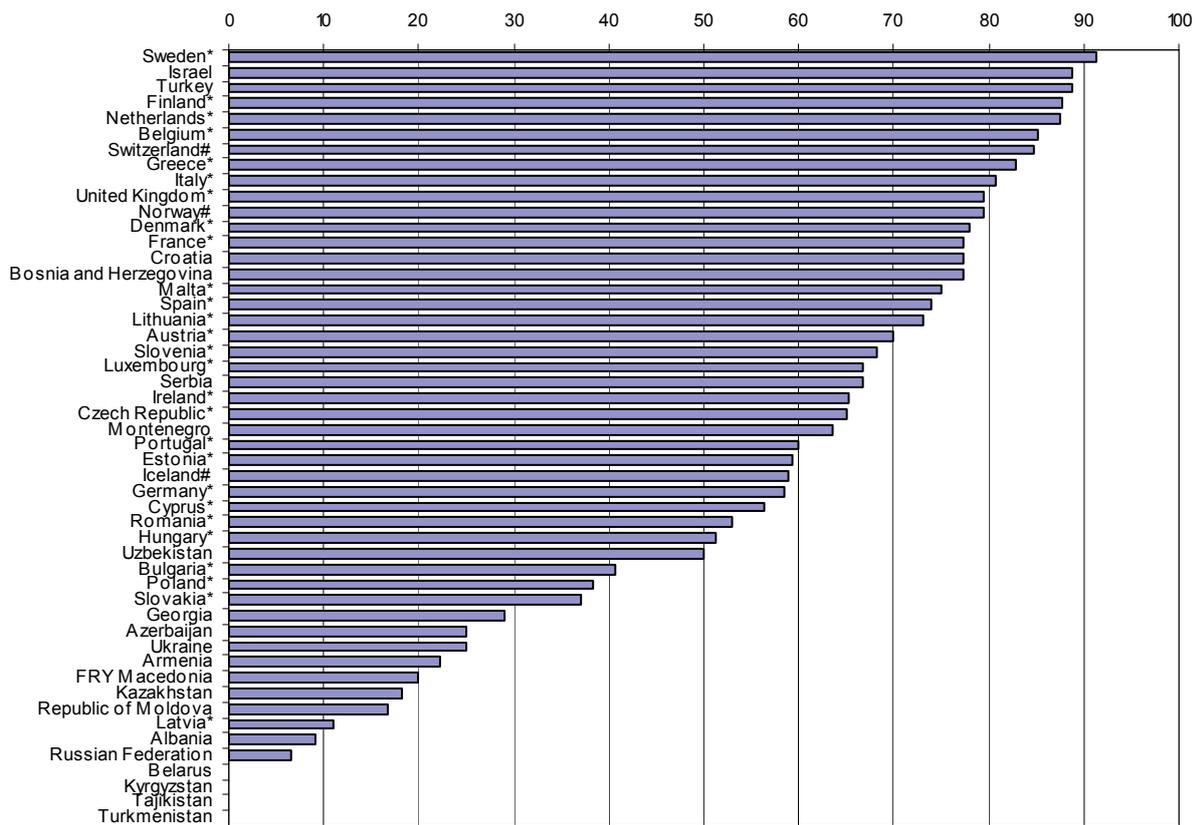
For the majority of countries (27 out of 46 producers of research), it was estimated that all the research produced addressed at least the own country (i.e. it cannot be ruled out that these were comparative studies of the own country with others). For additional 16 countries it was estimated

that more than 90% of research addressed at least the own country and only 10% or less focused exclusively on other countries. Most of the countries in the top ten group are member of the EU or the EEA. The number of references from a country was lower than the number of references mentioning a country in the title, abstract or keywords for all countries with the exception of Malta and UK. Research produced in UK addressed UK itself only in 62% of the publications, indicating that a considerable amount of research from the UK has other countries in its scope. A similar pattern was observed for Malta (see Figure 3.6).



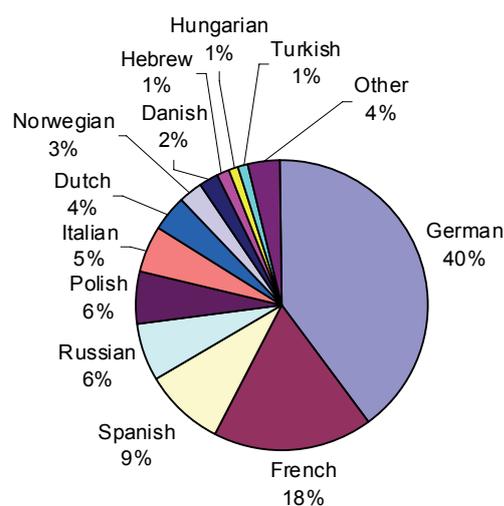
**Figure 3.6 Proportion of papers from one country dealing with the same country**

Also of interest is the estimation of the proportion of publications addressing one country produced in that country itself. This analysis is presented in Figure 3.7. The figure can also be read in a complementary way: the white part to the right of the bars represents the proportion of publications addressing a country but produced by researchers working in institutions outside that country. At least to some extent, each of the European countries has been targeted by research not produced in that country, although there are considerable differences among countries. Particularly, research on the countries from the former Soviet Union has been produced in other countries. For example, less than 10% of the publications addressing Russia had been produced at least partly in research institutions from the Russian Federation. For some of these countries, none of the publications identified as reporting research on them had been produced locally. In contrast, most of the research on Sweden has been produced there and less than 10% has been produced without Swedish involvement.



**Figure 3.7 Proportion of research on a country having been produced in that country**

As it can be expected, the vast majority (88%) of the publications was written in English. Occasionally (n=74; 0.3% of all publications), an additional language is reported. The language distribution of non-English publications is shown in Figure 3.8. Publications in German language account for 40% of the 3341 non-English publications, representing the second publication language for this topic.



**Language Distribution non-English publications (n=3341)**

**Figure 3.8 Language Distribution (non-English publications) (n=3341)**

The evolution of the number of references over time for each country is presented in Appendix 2G for the 20 countries with the highest number of references and for the period 2004 to 2009. Most of the countries show a similar pattern with growing number of references between 2004 and 2008 and a decrease in 2009. The steepest increase was observed for Portugal (300%). Increases of around 100% between 2004 and 2008 are observed for Norway and Ireland. The pattern was similar when analysing the number of publications referring to each country (i.e. mentioning the country in the title, abstract or keywords).

The following Table 3.2 lists the top-20 content related keywords mentioned in the pool of references. As in the SPHERE project, we focused on the keywords referring to the subject of the publication and not to the methods, discipline or drug names. Almost half of the references included the keyword “patient”, additionally 27% of the references included the keyword “patient satisfaction”.

**Table 3.2 Top 20 keywords**

<b>Keyword</b>	<b>n</b>	<b>% of all references</b>
Patients	13237	49
Patient Satisfaction	7400	27
Organization & Administration	6117	23
Education	5027	19
Attitude of health Personnel	3555	13
Risk	3040	11
Prevention & Control	3017	11
Utilization	2900	11
Health Services Needs and Demands	2805	10
Public Health	2644	10
Nurses	2529	9
Patient acceptance of health care	2406	9
Health Services accessibility	2396	9
Hospitals	2317	9
Drug Therapy	2227	8
Delivery of health care	2158	8
Needs assessment	2118	8
Health knowledge, attitudes, practice	2047	8
Communication	2017	7
Attitude to health	1947	7

In the SPHERE project, there were other keywords identified among the top ten. The following Table 3.3 reproduces the top-10 keywords from the SPHERE project (Delnoij & Groenewegen, 2007) comparing its former frequency with the frequency in current actual publications pool. As in the SPHERE project, the keyword most frequently mentioned in the publications was “patient”, although the proportion of references mentioning it was higher in the present study than in the SPHERE one. The proportion of publications mentioning “patient satisfaction” among its keywords is considerably higher in the present study pool. On the other side, the proportion of references including “hospital” or “general practitioner” among its keywords is considerably lower in the present

study than in the SPHERE results. The discrepancy regarding the key word “general practitioner” is likely to be largely explained by the fact that “general practitioner” was included as a search term in the literature search strategy of the SPHERE project but not in our literature search strategy.

The references counts differ between Table 3.2 and Table 3.3. This is due to the fact that Table 3.3 has been constructed based on the list function of ReferenceManager. This function delivers a list of all key words and the number of references including the keyword. In the output every single keyword is listed. For example if “patient” and “patients” are keywords, the output would include an entry for each of them and report the corresponding number of references including each of them. In contrary to produce Table 3.3 we searched the “keywords” field entering the words truncated with a wildcard in order to better capture the actual number of references reporting the concept in its keywords. For example we entered “patient\*” which identifies both the keywords “patient” and “patients”.

**Table 3.3 Top-10 keywords from SPHERE project and its placement in the current reference pool**

Top-ten Keywords in SPHERE	SPHERE project*		Present project		Difference
	n	%	n	%	%-points
Patient	19369	60	17752	66	+6
Hospital	11644	36	4530	17	-19
General Practitioner	5061	16	1395	5	-11
Patient Satisfaction	4674	15	7400	27	+12
Risk	4612	14	4108	15	+1
Education	4385	14	5698	21	+7
Physician	3401	11	3759	14	+3
Public Health	3371	10	2844	11	+1
Cost	3297	10	2071	8	-2
Drug	3203	10	3365	12	+2

\* Delnoij & Groenewegen, 2007.

Database keywords were grouped into thematic clusters following the framework reported in Appendix 2C.

Table 3.4 reports the frequency of each cluster. Satisfaction is the topic which according to the keywords has been studied most. It can also be estimated that issues of service delivery and supply of health care have been studied relatively frequently. According to keywording, the topics of privatization and licensing and accreditation can be considered to be under-researched areas. Expanding the search for the cluster topic keywords to the other relevant fields (title and abstract) leads to higher number of references for all thematic clusters, the greatest change being observed for the cluster of “administration/ management” which increases from 3.5% to 17.4% (see Table 3.5). After this expansion, the topic “satisfaction” is still the most researched one. Other topics change its rank, most prominently “administration/management” which shifts from 11th to 3rd rank.

**Table 3.4 Frequency of Thematic Clusters**

Thematic Cluster	Keyword field only		Expanded to title and abstract	
	N (rank)	% of references in database	N (rank)	% of references in database
Satisfaction	7410 (1)	27.5%	7908 (1)	29.3%
Service Delivery	6002 (2)	22.3%	6045 (2)	22.4%
Utilization	2988 (3)	11.1%	3000 (8)	11.1%
Manpower	2945 (4)	10.9%	4459 (4)	16.5%
Policy/Reform	2790 (5)	10.4%	3795 (6)	14.1%
Professional Education	2741 (6)	10.2%	2852 (10)	10.6%
Access	2689 (7)	10.0%	4293 (5)	15.9%
Acceptance	2406 (8)	8.9%	3142 (7)	11.7%
Finance/Expenditure	2220 (9)	8.2%	2924 (9)	10.9%
Planning	1200 (10)	4.5%	1970 (11)	7.3%
Administration/Management	934 (11)	3.5%	4714 (3)	17.5%
Privatization	436 (12)	1.6%	500 (13)	1.8%
Waiting lists	431 (13)	1.6%	689 (12)	2.6%
Licensing/Accreditation	234 (14)	0.9%	261 (14)	1.0%

In the following figures we present the analysis per country for the topic clusters “satisfaction”, “service delivery”, “utilization”, “manpower”, “policy/reform”, “administration/management” and “access” (i.e. the clusters ranking 1st to 5th in either of the countings presented in Table 3.5). The figures also include the overall percentages reported in Table 3.5 as reference. Analyses are based on the respective pool of references containing the thematic cluster keywords in the keyword, the title or the abstract field.

There are considerable differences by country regarding the topics of research (see Table 3.5 and Figures 3.13 to 3.19 and Table 3.6).

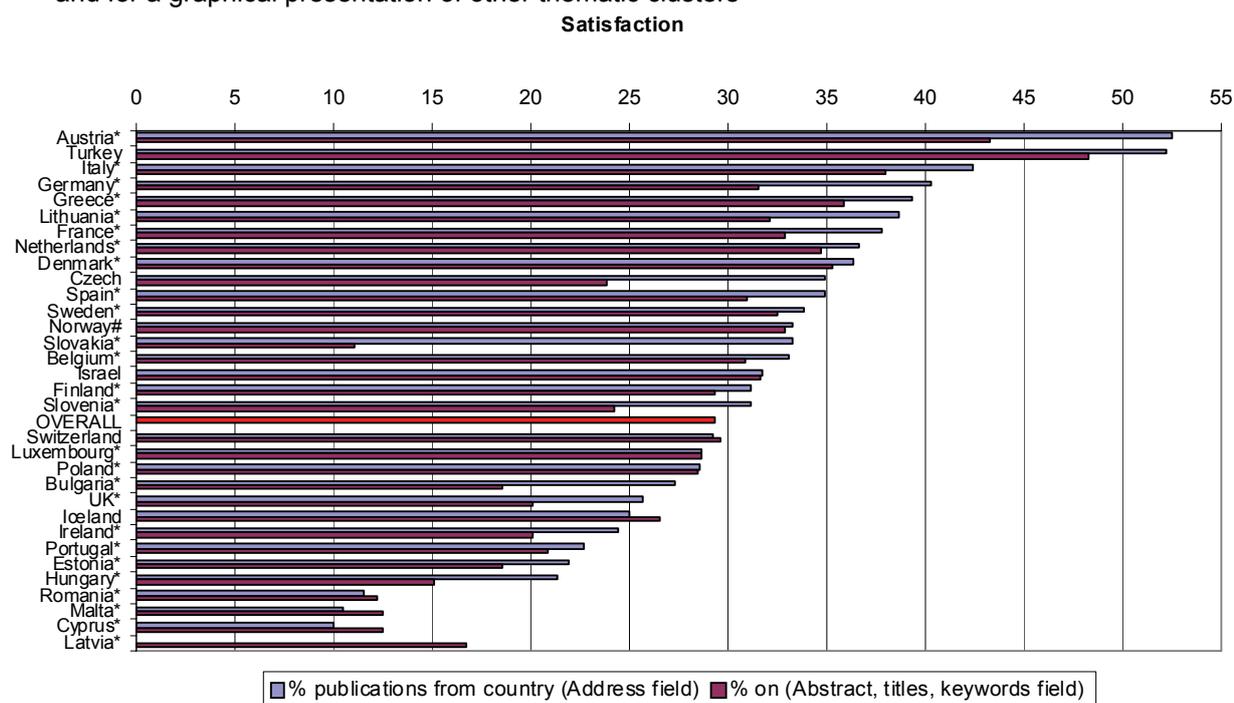
**Table 3.5 Summary of emphasis on thematic clusters in EU, EEA (+Israel and Turkey).**

Thematic Cluster	References from (Address field)			References on (Abstract, Titles, Keywords fields)		
	Range	Median	Mean	Range	Median	Mean
Satisfaction	0.0%-52.5%	31.4%	30.0%	11.1%-48.2%	28.9%	26.8%
Service Delivery	0.0%-100%	20.4%	23.3%	4.8%-43.8%	21.9%	22.7%
Utilization	0.0%-25.0%	10.5%	10.5%	0.0%-27.8%	12.1%	13.0%
Manpower	0.0%-40.0%	12.6%	13.9%	0.0%-31.3%	12.5%	14.1%
Policy/Reform	0.0%-45.5%	13.6%	15.1%	4.3%-38.9%	17.9%	19.2%
Admin/Management	0.0%-40.0%	15.5%	16.6%	6.3%-37.5%	13.9%	16.5%
Access	0.0%-34.6%	16.0%	17.2%	8.4%-38.8%	17.8%	19.4%

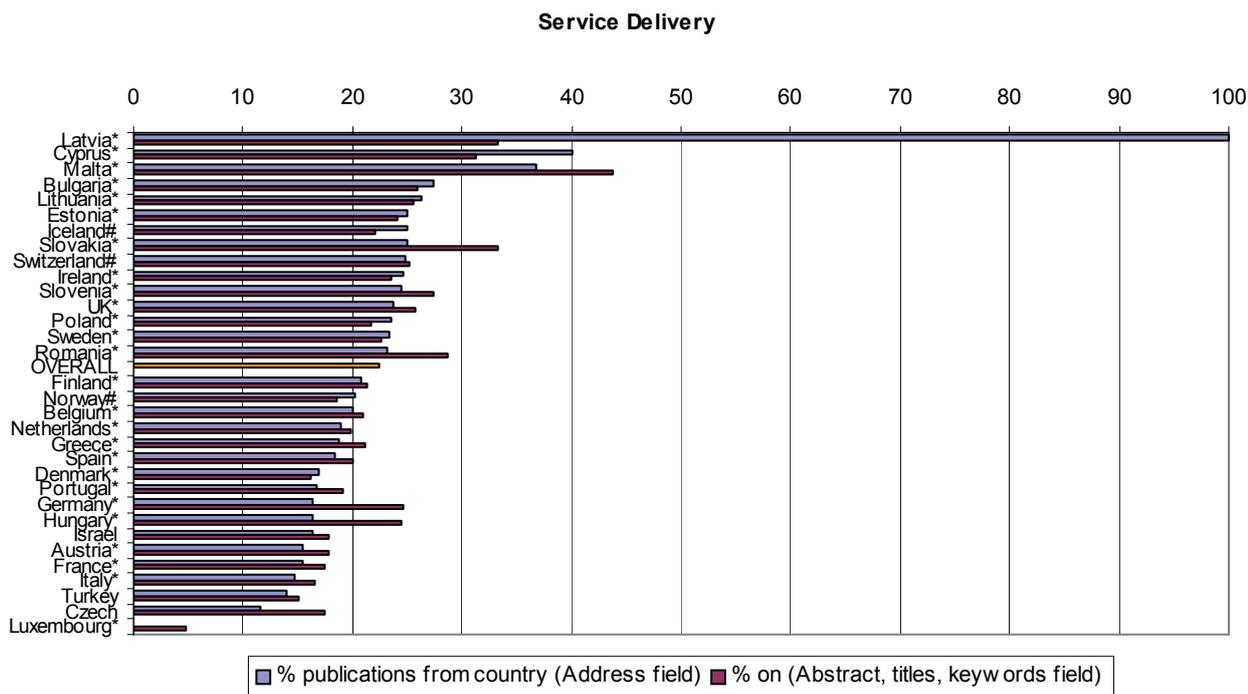
The majority of countries concentrate a considerable amount of research in the thematic cluster of satisfaction (28 countries report keywords related to this topic in >20% of their references). Satisfaction has been a topic in more than 50% of research from Austria and Turkey. When considering research focusing on these both countries, the thematic cluster still is considered in more than 40% of the publications. In general, there are no major differences in the proportion of publications addressing satisfaction between the publications from and the publications on a country. Only four countries show differences of more than 10 %-points between both parameters: The proportion of publications from Bulgaria, the Czech Republic and Slovakia is >10% higher than the proportion of publications “on” those countries addressing satisfaction. For Latvia, the opposite is the case (see Figure 3.9). Taking a look at research on delivery of services, the opposite picture is seen, with all references from Latvia addressing this topic whereas less than 20% of Austrian or Turkish references refer to this thematic cluster (Figure 3.10).

Issues of policy and reform account for an important percentage of references from or on newer EU Member States like Bulgaria, Romania and Estonia (over 30%) (see Figure 3.11).

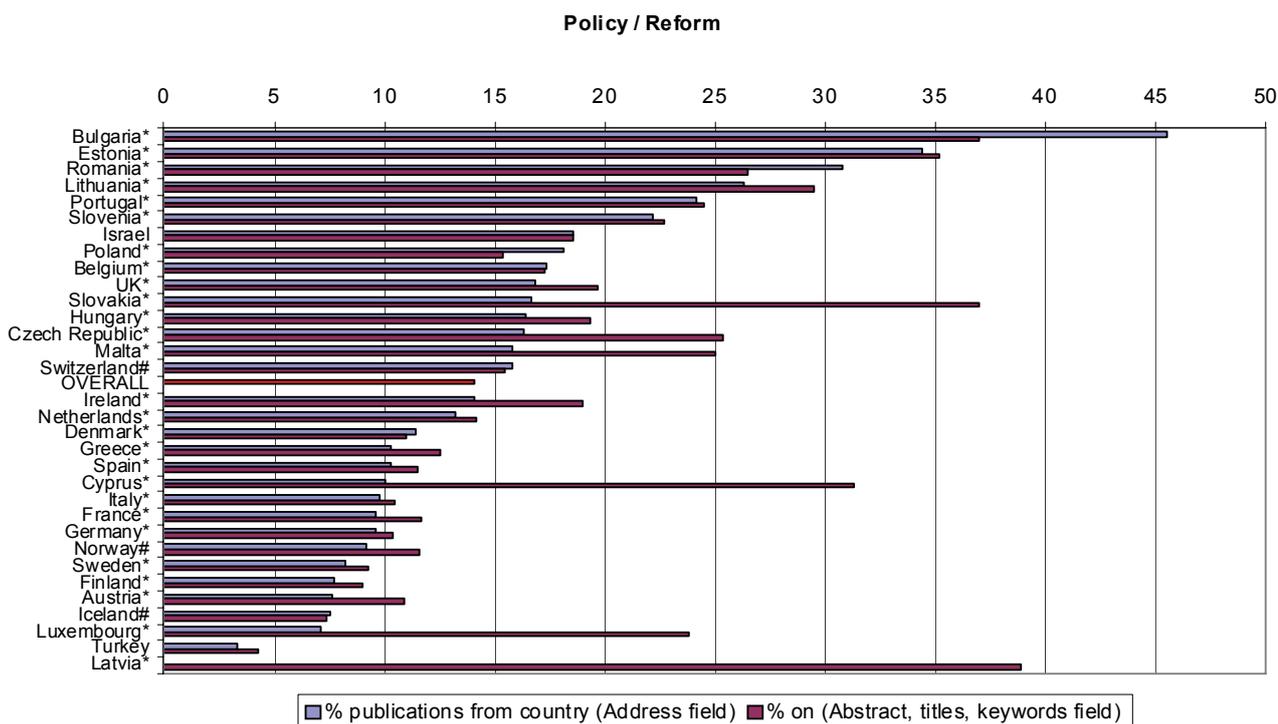
Some countries, like UK, Ireland, Switzerland or Hungary show more balanced distribution of research across thematic clusters than the other countries, which tend to have significantly higher percentage of research in one or two topics (see Appendix 2E for the whole data on each country, and for a graphical presentation of other thematic clusters



**Figure 3.9 Satisfaction as percentage of the number of references per country**



**Figure 3.10 Service delivery as percentage of the number of references per country**



**Figure 3.11 Policy/Reform as percentage of the number of references per country**

### 3.5.1.3 Analysis of Sample of Abstracts

The sample of 1,000 abstracts (3.7% of the literature database) consisted of 91.8% abstracts from Europe, 4.4% abstracts from Europe addressing countries outside Europe and 3.8% abstracts from non-European countries, the latter being excluded from further analysis. Overall 80% of the abstracts reported health services research in the wide sense (i.e. macro-level, organisations, professional groups, etc.), whereas only 24.1%<sup>14</sup> of the European abstracts were considered to report research on health systems *sensu stricto* (i.e. with a macro-level focus). Of the abstracts reporting health systems research, 9% had a non-European focus but had been produced with at least some participation of researchers based in Europe.

The following Table 3.6 lists the top-20 content related keywords mentioned in the set of references classified as health systems research. As for the whole database, “Patients” is the most frequent keyword. However, patient satisfaction, which ranked in the second place of the whole sample, does not appear among the first 20 keywords of this subset. Similarly “risk” or “drug therapy” are missing in the subset of health systems research. Keywords like “policy” or “health policy” which did not appear among the top 20 of the whole sample are relatively frequent in the subset of health systems (19.8% and 15.5% respectively).

**Table 3.6 Top-20 Keywords in Health Systems Research set of references (n=232)**

Keyword	n	% of sample
Patient(s)	105	45.3
Organization & Administration	80	34.5
Hospital(s)	71	30.6
Health service(s)	52	22.4
Health Services accessibility	47	20.3
Policy	46	19.8
Utilization	46	19.8
Education	39	16.8
Health policy	36	15.5
Cost	33	14.2
Delivery of health care	30	12.9
Public Health	29	12.5
State Medicine	29	12.5
Training	28	12.1
Health services needs and demand	27	11.6
Organization	27	11.6
Work	27	11.6
Primary Health Care	25	10.8
Government	24	10.3
Nursing	24	10.3

As with the whole sample, analysis of the frequency of the thematic clusters was done with the keyword counting tool. The results are presented in Table 3.7. The thematic cluster with the highest

<sup>14</sup> Excluding research from outside Europe leaves a total of 962 abstracts in the sample.

frequency is "Policy/ Reform", which is a topic in around 30% of the references. This contrasts with the much lower frequency of this cluster in the overall database (10%, see Table 3.5). In contrast with the whole sample, "Satisfaction" seems to be a topic of less importance in this subset of references and is mentioned in less than 10% of the subset compared to 27.5% in the whole database.

**Table 3.7 Frequency of Thematic Clusters in sample of references**

Thematic Cluster	Keyword field only		Expanded to title and abstract	
	N (rank)	% of references in sample	N (rank)	% of references in sample
Policy/Reform	72 (1)	31.0%	73 (1)	31.5%
Service Delivery	69 (2)	29.7%	69 (2)	29.7%
Administration/Management	53 (3)	22.8%	55 (4)	23.7%
Access	50 (4)	21.6%	67 (3)	28.9%
Finance/Expenditure	46 (5)	19.8%	49 (5)	21.1%
Utilization	46 (6)	19.8%	46 (6)	19.8%
Manpower	39 (7)	16.8%	42 (7)	18.1%
Professional Education	25 (8)	10.8%	27 (8)	11.6%
Satisfaction	23 (9)	9.9%	25 (9)	10.8%
Acceptance	20 (10)	8.6%	25 (10)	10.8%
Planning	18 (11)	7.8%	18 (11)	7.8%
Privatization	11 (12)	4.7%	14 (12)	6.0%
Waiting Lists	10 (13)	4.3%	10 (13)	4.3%
Licensing/Accreditation	3 (14)	1.3%	3 (14)	1.3%

The results of the sample analysis regarding scope, type of research, methodological approach and type of dependent variable are summarized in Table 3.8. The *scope* of 18.1% of the references was international (i.e. research comparing at least two countries). Regarding the type of research, 25.4% of the abstracts were considered to be descriptive, i.e. mainly focusing on the description of health system features (e.g. regulations, policies, educational programs, etc.). The rest was considered to be analytical (i.e. including some degree of analysis of effects or of influencing factors).

The most common *methodological approach* was quantitative (50.1%), including both primary data collection as well as analysis of data collected for purposes other than research (e.g. routine statistics, administrative data). The literature review approach was reported only in 9.5% of the abstracts. A total of 51 (22%) references were classified as having conducted document analysis, the vast majority of them were descriptive studies in which we assumed<sup>15</sup> that the main source of information were documents. Only 4.1% of the abstracts classified as analytical actually reported a document analysis as its methodological approach.

<sup>15</sup> Many did not explicitly report the information sources.

The most frequently reported *dependent variable* was “utilization/costs”, which was reported in 14.2% of the abstracts. Satisfaction was assessed in 4.7% of the abstracts. However, for the majority of abstracts (65.9%) it was either not possible to identify a dependent variable or the variable was neither health outcomes, utilization/costs, satisfaction or quality of care.

**Table 3.8 Abstract analysis**

Attribute	Value	Percentage of abstracts (n=232)
Scope	International	18.1 %
	National/Regional	81.9%
Type of Abstract	Descriptive	25.4%
	Analytical	74.6%
Methodological approach	Quantitative	50.1%
	Qualitative	10.8%
	Literature review	9.5%
	Document analysis	22.0%
	More than one	6.9%
	Dependent variable	Health outcomes
	Utilization/Costs	14.2%
	Satisfaction	4.7%
	Quality of care	2.2%
	Combination of the above	9.1%
	Other or none	65.9%

## 3.5.2 Internet Search

### 3.5.2.1 Google Search

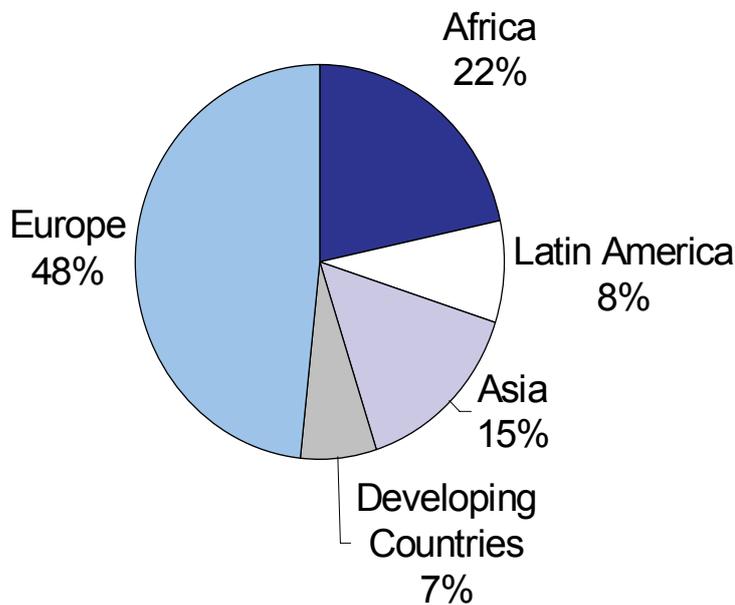
The internet search results are summarized in Appendix 2F for all the member countries of the WHO European Region, for each of the two searches. The internet search identified no websites containing neither of the search terms for six countries (Albania, Andorra, Monaco, San Marino, Tajikistan and Turkmenistan). For all other countries at least one of the two searches yielded at least one hit. The number of hits varied considerably, ranging from 1 to 11400 for the search term “health system research” and from 1 to 5580 for the search term “health systems research”. The results of this approach are similar to those of the bibliometric analysis. According to the absolute number of hits, UK ranks first. There is a major overlap of the group of countries producing the highest number of internet hits for health system(s) research with the group of countries identified in the bibliometric analysis as producing the bigger share of literature.

There is a moderate correlation between the number of internet search hits from a country and its GDP ( $r= 0.65$  for the first search and  $r=0.58$  for the second search). The correlation of the number of hits for both search terms with the country population is much lower ( $r= 0.34$  and  $r=0.29$  respectively).

### 3.5.2.2 International Project Search

The search in the CORDIS project database yielded a total of 141 hits for the different search term combinations. After removing duplicates a total of 103 potentially relevant projects remained.

After screening title and abstract of the projects, 60 (i.e. 58 %) were considered to be health systems research projects or actions aiming at developing health systems. All but two projects were coordinated by institutions from European countries (with the two exceptions coordinated by institutions from Cuba and Thailand respectively). However, less than half of the projects were targeting European nations (n=29; 48 %), the rest targeted either African, Asian or Latin-American countries or developing countries from several regions simultaneously (see Figure 3.12).



**Figure 3.12 Target countries of EU-funded health systems research projects**

Regarding the EU-funded projects targeting European countries, 20 (69 %) had been completed and 9 (31 %) were under execution at the time the search was performed (i.e. by October 2009). Table 3.9 shows the number of projects for which an institution from a country was reported as project coordinator and the number of projects for which at least one institution from that country was reported as participating (according to information from CORDIS). The last column shows the number (%) of projects in which a country is represented by at least one institution. A total of 37 countries are represented in EU-funded health systems research projects targeting European countries. Five countries (UK, Italy, Germany, France and Spain) are represented in more than one third of the projects. These countries act as project coordinators in 62% of the projects. Very few countries from outside the EU participated in more than two of these projects (Switzerland n= 9, Croatia n=5).

**Table 3.9 EU-funded Health Services Research – geographical distribution of 29 projects**

Country	Coordinator in n (%)		Participant in n (%)		Coordinator or participant in n (%)	
	n	%	n	%	n	%
United Kingdom	4	13.8%	10	34.4%	14	48.3%
Italy	4	13.8%	9	31.0%	13	44.8%
Germany	3	10.3%	8	27.6%	11	37.9%
France	3	10.3%	7	24.6%	10	34.5%
Spain	4	13.8%	6	20.7%	10	34.5%
Switzerland	2	6.9%	7	24.1%	9	31.0%
Belgium	2	6.9%	5	17.2%	7	24.1%
Austria	2	6.9%	3	10.3%	5	17.2%
Croatia	1	3.4%	4	13.8%	5	17.2%
Greece	2	6.9%	3	10.3%	5	17.2%
Ireland	1	3.4%	4	13.8%	5	17.2%
Slovenia	1	3.4%	4	13.8%	5	17.2%
Netherlands	-	-	5	17.2%	5	17.2%
Denmark	-	-	5	17.2%	5	17.2%
Finland	-	-	5	17.2%	5	17.2%
Sweden	-	-	4	13.8%	4	13.8%
Portugal	-	-	4	13.8%	4	13.8%
Poland	-	-	4	13.8%	4	13.8%
Hungary	-	-	4	13.8%	4	13.8%
Bosnia and Herzegovina	-	-	3	10.3%	3	10.3%
Slovakia	-	-	3	10.3%	3	10.3%
Estonia	-	-	2	6.9%	2	6.9%
Serbia	-	-	2	6.9%	2	6.9%
Macedonia	-	-	2	6.9%	2	6.9%
Albania	-	-	2	6.9%	2	6.9%
Georgia	-	-	2	6.9%	2	6.9%
Russia	-	-	2	6.9%	2	6.9%
Moldova	-	-	2	6.9%	2	6.9%
Czech Republic	-	-	2	6.9%	2	6.9%
Norway	-	-	2	6.9%	2	6.9%
Turkey	-	-	2	6.9%	2	6.9%
Luxembourg	-	-	1	3.4%	1	3.4%
Belarus	-	-	1	3.4%	1	3.4%
Kazakhstan	-	-	1	3.4%	1	3.4%
Ukraine	-	-	1	3.4%	1	3.4%
Lithuania	-	-	1	3.4%	1	3.4%
Bulgaria	-	-	1	3.4%	1	3.4%

According to our assessment of the abstracts and keywording of the projects provided by CORDIS, there were areas not addressed in this set of projects: access, acceptance, privatisation, waiting lists, planning and accreditation/licensing (see Table 3.10).

**Table 3.10 Areas of health systems addressed in EU-funded projects.**

Thematic Cluster	Projects	
	n	%
Admin/Management	12	41.4%
Policy/Reform	12	41.4%
Professional Education	8	27.6%
Service Delivery	5	17.2%
Manpower/ Workforce	4	13.8%
Finance/Expenditure	2	6.9%
Utilization	1	3.4%
Satisfaction	1	3.4%
Acceptance	0	-
Privatisation	0	-
Waiting lists	0	-
Planning	0	-
Accreditation/licensing	0	-
Access	0	-

Some projects were considered to address more than one topic

### 3.5.3 Additional Information Sources

#### 3.5.3.1 Country Experts Consultation

There was information available from 26 countries. Responses were lacking from Estonia, Greece, Hungary, Iceland, Latvia, Luxembourg and Sweden.

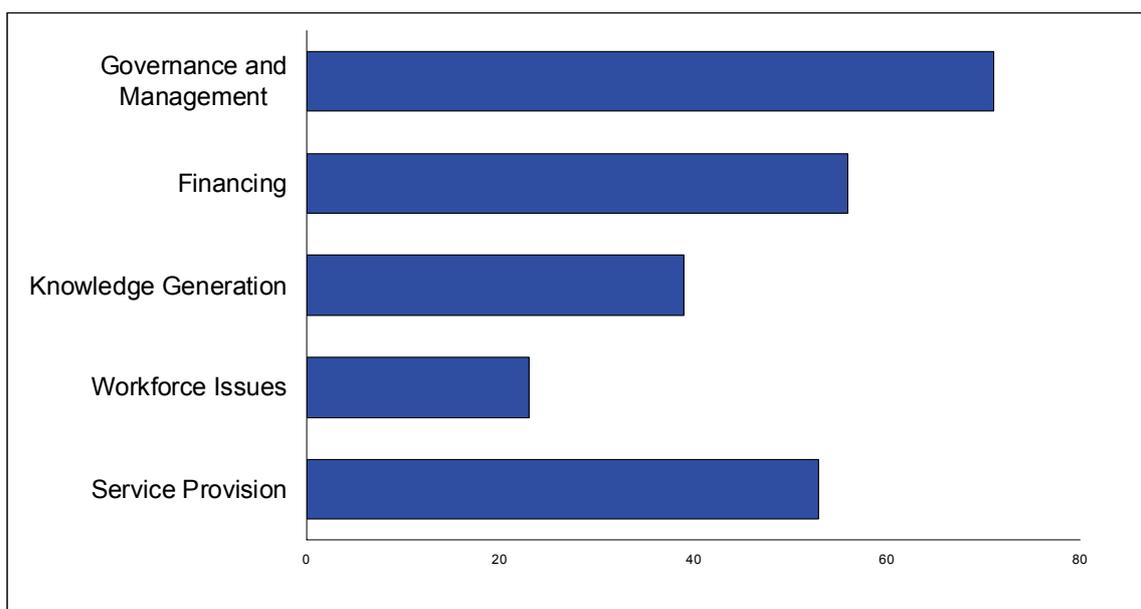
The existence of institutions specifically committed and specialised in health systems research was reported for Bulgaria, Cyprus, Czech Republic, England, Finland, France, Germany, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Slovenia and Spain. The number of institutions reported varied across countries.

Research regarding financing and sustainability of the health system and the health services has been reported to be a priority area for policy makers across almost all countries. A special interest in insurance models is reported for some countries in Eastern Europe. Other topics which raise interest across several countries are systems for *provider payment*, (particularly for hospitals), *information technologies* in the health system, assessment of the *impact of reforms*, models for service organisation and provision (incl. *commissioning/contracting/purchasing*), or *integration/coordination of care* (see Appendix 2F). An interest on comparative health systems research (i.e. international comparisons) emerges from the answers to the questionnaires too.

### 3.5.3.2 Online Survey

The survey was answered by a total of 411 stakeholders, including researchers and decision-makers in the field of health. 19 % declared to be involved or interested in health systems research (for more details on the general results of the survey cf. to Chapter 2).

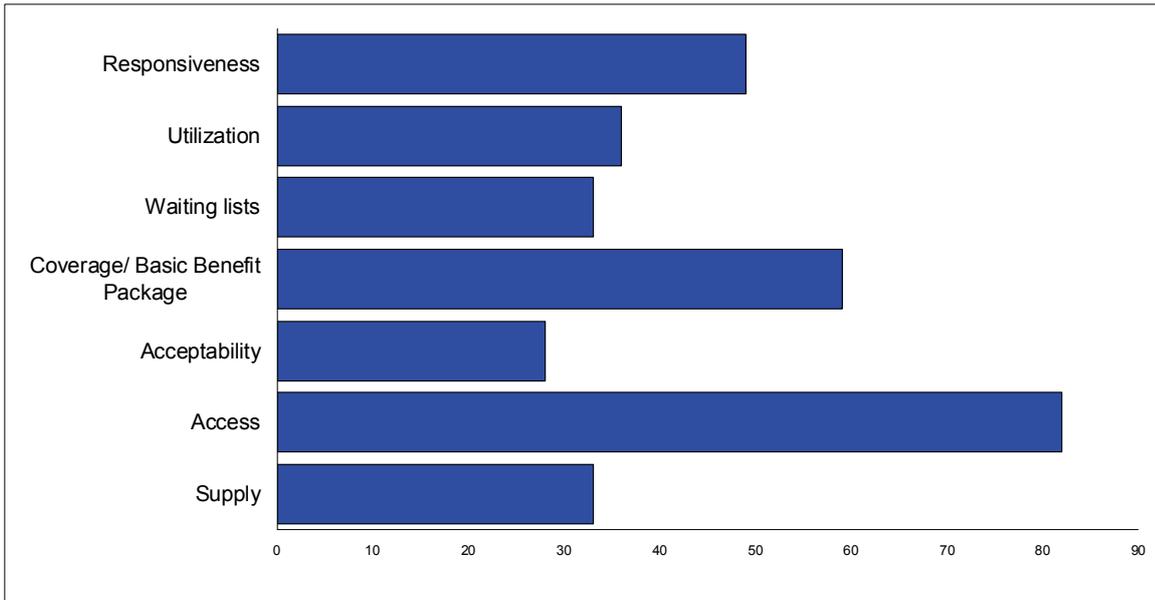
The participants involved or interested in health systems research were asked to identify the main topics of health systems research which require to be prioritised among a given list. The area of governance and management was the most frequently mentioned as requiring prioritisation among responders (70%), whereas the area of workforce issues was the most frequently considered as not requiring prioritisation (77%). The results of this question are presented in Figure 3.13.



**Figure 3.13 Priority Areas for Health Systems Research (% of responders)**

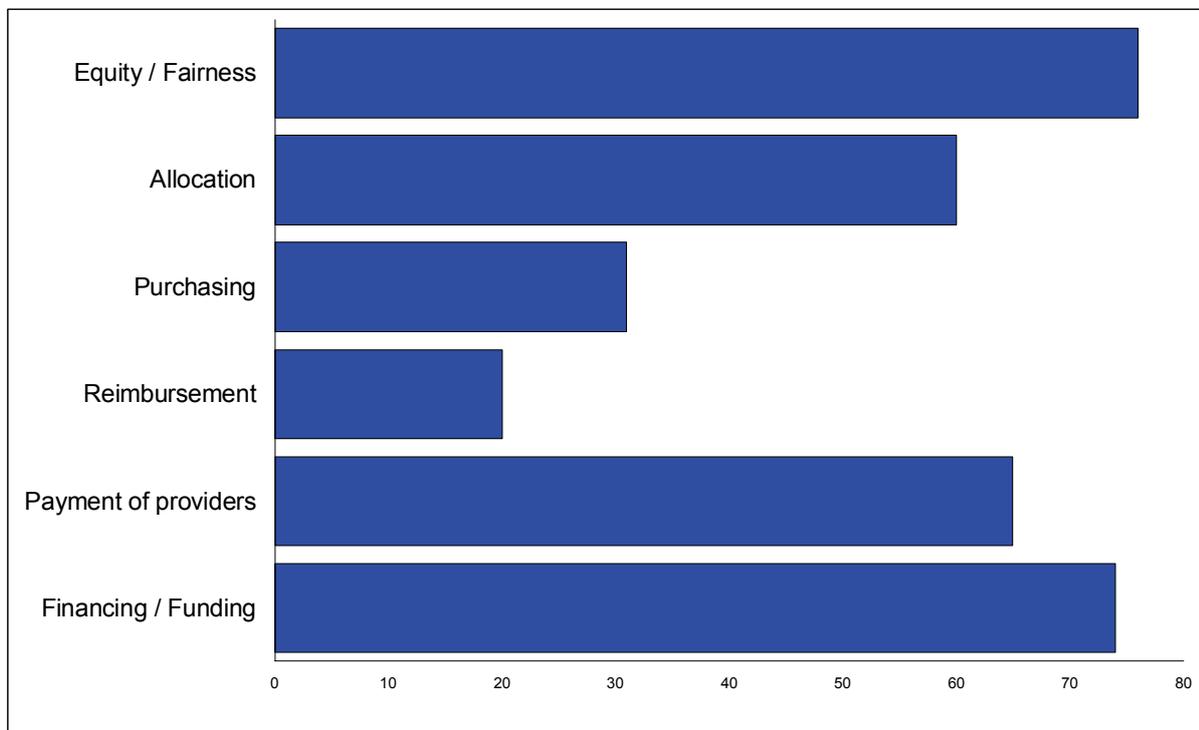
The fields of service provision, financing and governance/management were mentioned as priority areas by more than 50% of the responders with an interest in health systems research. The following figures give a deeper insight in the topics considered by responders to be priority within each of these three fields.

Within the field of service provision, responders identified the topics *access*, *coverage/ basic benefit package* and *responsiveness* (i.e. satisfaction) as the ones of highest priority (see Figure 3.14).



**Figure 3.14 Priorities within the thematic field of Service Provision (% of responders)**

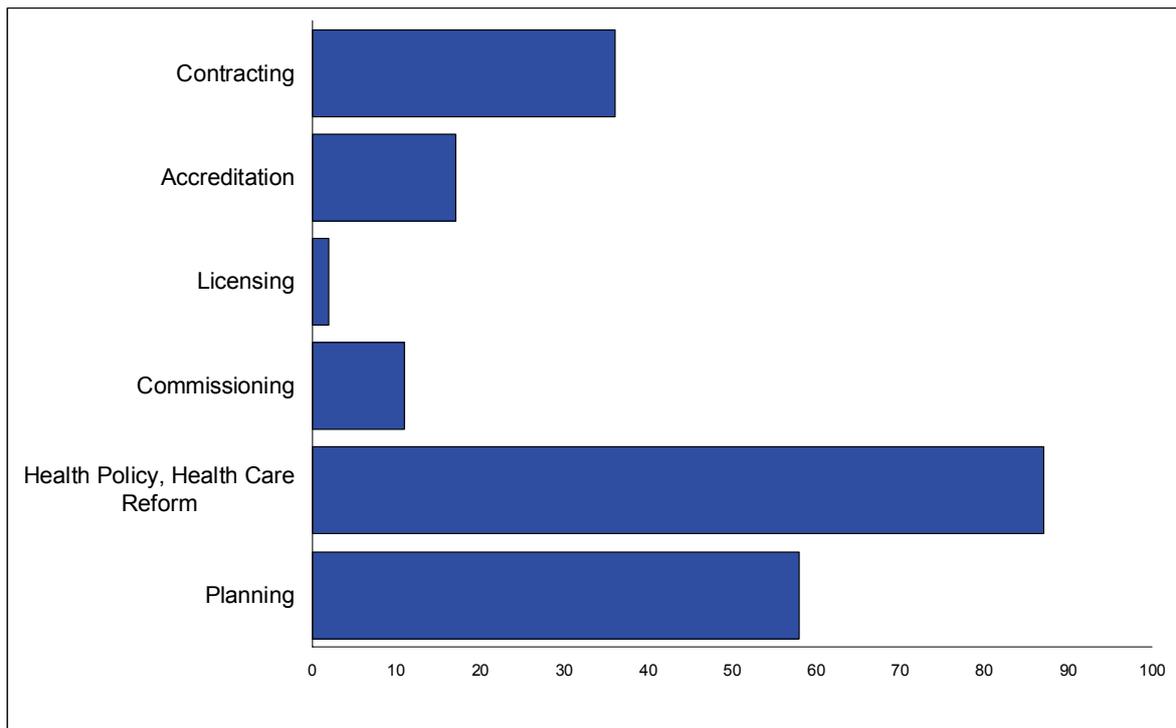
Within the field of financing, the most mentioned priority for research was *equity/fairness of financing* (76% of responders interested in health systems research). Financing systems in general including financial sustainability of the health systems was also identified as a priority issue by most of the responders (74%) (see Figure 3.15).



**Figure 3.15 Priorities within the thematic field of Financing (% of responders)**

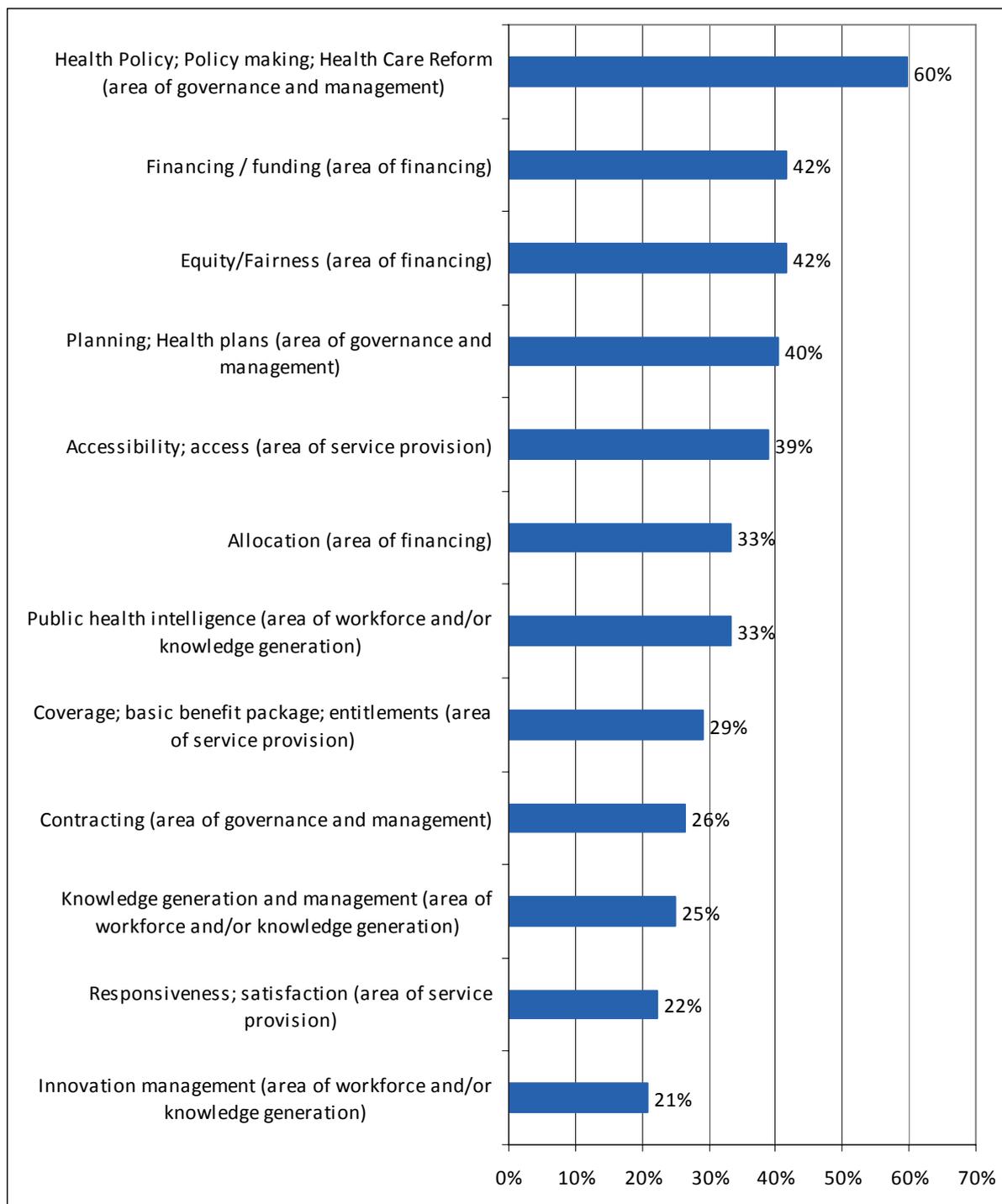
Within the research field of governance and management, the priority is clearly the assessment of health care reform (87% of responders, see Figure 3.16). This quantitative finding is underlined by the answers to open questions, which mentioned the need to assess the impact of reforms on population health.

In addition, open answers mentioned a need for addressing cross border care and circulation of patients as well as issues related to the tension between private and public sector, market and state.



**Figure 3.16 Priorities within the thematic field of Governance and Management (% of responders)**

As figures 3.14-3.16 show the share of respondents within each main topic area, we have also summarized the same listing of priorities in comparison to all responders to the survey section on health systems. Figure 3.17 provides an overview of the 12 most often mentioned priority areas, sorted in descending order compared to the total sample. E.g. the number one priority in that case remains the area of 'health policy / health care reform: 86 percent of those who consider 'governance and management regard this as an important area, which is equal to 60 percent of all responders.



**Figure 3.17 Priorities overarching all thematic fields (% of all responders on health systems)**

### 3.5.3.3 Workshop on health systems research

As described before the framework for health systems research and the results of the bibliometric analysis were presented at the Health Services Research Working Conference in Den Haag (8th and 9th of April 2010) and discussed with researchers and users of research in working sessions. In the working session on health systems, three specific areas for discussion were identified previously: methodological aspects of health systems research, evaluation of privatization and

market competition in the health systems and issues of workforce planning and professional mobility. A set of topics to address in future research on health system emerged from the structured discussions in the working sessions (see Box 3.3).

**Box 3.3 Topics discussed in European Health Services Research Conference (The Hague, 8th - 9th April 2010).**

***a) Methods to evaluate health care reforms and health system performance***

- Finding a common set of performance domains (health status / outcomes, responsiveness / satisfaction, financial protection and sustainability, equity ...) including role of potential intermediate domains (e.g. access, quality, efficiency).
- Indicators: selection and definition of indicators for performance domains, comparability of indicators across countries, potential to aggregate to create indices etc.
- Data sources and their combination for measuring indicators (i.e. routine data, data from research, etc.).
- Implementation of interdisciplinary research.
- Concept of best evidence (definition of acceptable study designs).
- Implementation: types of incentives (incl. financial), research on the period between reform inception and full implementation etc.
- Assessment of health care reform: against specific explicit aims/goals vs. assessment of all intended and unintended effects vs. effects on health system performance in general.

***b) Regulation vs. markets and competition / Role of private sector***

- Markets and competition in health care: objectives and effects (both intended and unintended) on accessibility, quality, health outcomes, responsiveness etc.
- Privatisation: definitions and conceptual issues (e.g. privatisation = commercialisation?; privatisation = one way street?), objectives and effects (both intended and unintended) on accessibility, quality, health outcomes, responsiveness etc.
- Performance comparisons: private vs. public providers.
- Regulation in health care: objectives to meet societal goals of welfare systems, implementation and effects.

***c) Workforce planning and professional mobility.***

- Migration of health care workforce.
  - Effects on country of origin and on target country (e.g. impact of weekend migration on quality of care).
  - International management of health care workforce migration: Needs? Tools? Experiences?
- Changing definitions of professional tasks (e.g. delegation of physician activities to other professionals, delegation across disciplines).
- Management of workforce.
  - Needs based planning of workforce (and workplaces).
  - Forecasting.
- Gender issues of the above.

## 3.6 Discussion and Conclusions

### 3.6.1 Main findings

Both the bibliometric analysis and the internet searches (Google and CORDIS) indicate that especially in the eastern European countries there is a need to develop health systems research capacity. There are few publications from institutions based in these countries, there are also few internet hits, and finally these countries are underrepresented in EU-funded projects.

Both analyses (the bibliometric of the whole database and the in-depth of a sample of abstracts) suggest that the topics of waiting lists, accreditation/licensing and privatization might be under-researched. The limited research on the effects of privatization of health services provision seems particularly relevant, since in many European countries privatization of health services has been ongoing in the past years.

The additional information sources underline the need to prioritize research on financing issues. Country experts reported financing models and financial sustainability as major interest topics for decision and policy makers. The online survey also suggests financing / funding issues as a priority research topic. In addition, the assessment of health care reforms effects emerges as a priority topic both in the expert consultation as well as in the online survey. In discussions with health systems research experts and users based on these preliminary findings, methodological issues of health systems research as well as issues on privatization of health services were identified as priority fields of research.

### 3.6.2 Strengths and Limitations

In this report, a bibliometric analysis was conducted in order to assess the status of health systems research in Europe. Besides this approach, internet searches were performed to complete the picture of health systems research. Additionally, data from a survey among researchers and policy makers in the field of health systems were taken into account. Finally, the preliminary findings were presented at the Health Services Research Working Conference in The Hague (8th and 9th of April 2010) and discussed with the participants in working sessions. This variety of approaches allowed us to address the topic from different perspectives and to increase the validity of our findings.

Regarding the topics of health systems research, the main results are those of the bibliometric analysis constructed with the aim of identifying health systems research. The main question here is whether the literature search was able to identify health systems research with a high degree of specificity. Although the analysis of keywords and of thematic clusters suggests that the database includes an important amount of research on health systems, the in-depth analysis of the abstracts suggests a low specificity for health systems research. The more detailed analysis of the sample of abstracts indicates that the search strategies mainly identified health services research in general (i.e. on different levels of the health system) and lacked on specificity for research on the macro-level. Less than a quarter of the abstracts of the in-depth-analysis sample addressed the macro-level. Thus, the findings of the bibliometric analyses have to be interpreted with caution. The bibliometric analyses probably give a good impression of the coverage of *health services research* in general in the publications. Since only a few of the publications identified in the search could be considered to be *health systems research* (according to the analysis of a sample), we think that the findings of the bibliometric analysis apply mainly to the broader field of health services research. Health systems research seems difficult to be identified with a high level of specificity using this kind

of approach. However, the analysis of a subset of references selected after assessing the abstracts in detail allows describing the field of health systems research more accurately.

### **3.6.3 Implications and Recommendations**

Regarding the shaping of the research agenda on health systems in Europe, our findings reveal a need to address the consequences of health reforms in a sound methodological way, which allows to identify the relevant effects of health policy on health, equity and financial sustainability of European health systems. Both European and national policies need to be evaluated. Since there have been important privatization movements in many European countries and the health sector has been increasingly opened to market forces (either in an incremental way or within major privatization waves), there is a need to evaluate the effects that the growing shift from public to private sector is having on health systems and on the outcomes of health systems.

Sound assessments of health care reform require the refinement of methodological approaches. For comparative health systems research, indicators of health systems performance need to be further developed and refined. There is also a need to further develop multidisciplinary study methods to address the variety of questions related to health systems functioning and performance. In addition, there is also a need to define criteria to identify high quality research (i.e. research with high validity) in health systems in a similar way as it has been done for clinical research by the evidence based medicine movement.

Finally our findings clearly point out the need to develop health systems research across Europe, and particularly in the countries of former Eastern Union and former Soviet Union. The health systems of that countries have been object of major reforms in the past years (cf. Health Systems in Transition series (European Observatory for Health Systems and Policies) shifting from classical Semashko health systems to different models of health system organization and financing while at the same time being under enormous financial pressures derived from the transition of socialist economic order to market oriented economic system. EU Member States have also implemented major reforms of their health systems or are in a state of continuous incremental reform. The purpose of those reforms being the achievement of financial sustainability, more equity, higher quality of care, etc. (with changing weights of each of the aims). The assessment of these reforms and policy processes require the availability of researchers and of institutional and political environments which foster research on health systems. Thus capacity building on health systems research reveals as a major priority. Capacity needs to be build on the side of researchers (i.e. education of researchers from different disciplines to conduct health systems research) as well as on the side of potential users of health systems research. The latter is of major importance, since without the convincement of key policy makers of the need to rely on sound health systems research, it will not be possible to develop sustainable research capacity.

According to our findings, it can be recommended that in future European (EU) funded research priority is given to projects that address the effects of health care reform, particularly the effects of privatization and commercialization of health services and that gather researchers from a broad range of European countries including researchers from EU Member States as well as from accession candidates and even from the former Soviet Union.

In our view, these issues should be taken into account when formulating the European research agenda on the short and medium term.

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