

Healthcare systems in Europe: towards an incorporation of patient access

Nadine Reibling*

University of Mannheim, Germany

Summary The core of existing healthcare typologies is the public–private mix in the three areas of funding, provision and regulation of healthcare services. This article aims to contribute to the debate by adding ‘healthcare access’ as an important dimension for comparing healthcare systems. In contrast to previous analyses, I extend the concept of access by looking at regulative aspects and financial incentives that shape entry and reception of care. Based on empirical indicators for three different dimensions of healthcare access – gatekeeping, cost sharing and supply – a cluster analysis is performed that yields four access regime types: financial incentive states; strong gatekeeping/low supply states; weakly regulated/high supply states; and mixed regulation states. The countries clustered in the access regimes show a different pattern than typologies based on other system indicators. This suggests that previously used dimensions for comparison do not sufficiently capture patients’ access to healthcare.

Key words access, cost sharing, gatekeeping, healthcare typologies, welfare regimes

Introduction

Healthcare systems are concerned with the provision of services to persons in need. Based on this notion, scholars have criticized Esping-Andersen (1990) for neglecting welfare services in developing his three worlds of welfare capitalism (Alber, 1995; Bambra, 2005; Jensen, 2008). Existing healthcare typologies instead emphasize the service dimension by basing their taxonomies on the public–private mix of health systems in funding, provision and regulation of care (Wendt et al., 2009). With this approach these studies adapt Esping-Andersen’s principle of the welfare mix.

The focus on the welfare mix covers crucial dimensions of the healthcare systems, such as who provides care (for example public or private hospitals), who regulates care (for example the state or corporate actors) and who finances care (for example private insurance companies or tax revenue). Nevertheless,

they overlook the second principle that was at the core of Esping-Andersen’s welfare regimes: the principle of de-commodification. The important aspect about de-commodification is that it looks at welfare programmes from the perspective of the recipient since it investigates the *conditions* (means test, waiting days) under which benefits can be received and the *benefit levels* (replacement ratios).

This article develops an analogy to de-commodification for healthcare by proposing access as a central dimension for the comparative analysis of health systems. Just as de-commodification highlights the recipients’ perspective and therefore stresses the social impact of the welfare state (Alber, 1995), putting access at the centre of a health typology strengthens a patients’ perspective and thereby the impact of health services on individual health.

*Author to whom correspondence should be sent: Nadine Reibling, University of Mannheim, Graduate School of Economic and Social Sciences, D7, 27 Mannheim 68131, Germany

While a measure of access has been included in all previous typologies (OECD, 1987; Moran, 1999, 2000; Bambra, 2005), the definition of access used was restricted to a very narrow concept: the degree of coverage or universality of health systems. In this article, I extend the concept of access by looking at regulative aspects and financial incentives that shape entry and reception of care. As a result, three different modes of influencing healthcare access – legal regulations (for example gatekeeping), financial incentives (for example co-payments) and supply (for example availability of services) – are proposed. Based on empirical measurements for these dimensions a cluster analysis is performed in order to develop a typology of healthcare access.

The next section reviews the most influential healthcare typologies with a special focus on the theoretical dimensions put forward for the development of health system types. Then, the narrow conceptualization of access and the minor role of a patient's perspective is demonstrated. Using the principle of de-commodification as a guideline, the definition of access is extended and proposed as a distinct theoretical dimension for the development of system types. The following section presents the empirical measurements for access to healthcare in 16 countries and the development of access regimes based on a hierarchical cluster analysis. Finally, the country clusters obtained are discussed and compared with previous healthcare typologies.

Health system types

When we go beyond a small-sized comparative case study design, there is a need to reduce complexity by developing a comprehensive framework that describes all cases on the basis of precisely defined dimensions and comparably collected indicators. While not the first, the most widely recognized contribution in typology-building was made by Esping-Andersen (1990, 1999) and his three worlds of welfare. His model has been criticized particularly by health scholars for only including sickness benefits in the development of his typology, which ignores the central service-character of health systems (Alber, 1995; Bambra, 2005). Healthcare systems are indeed a major part of the welfare state but they are also 'shaped by dynamics of their own' (Moran, 2000: 139) and therefore need to be captured by a separate classification. Even though healthcare

typologies have diverted from his three welfare regimes, the concepts proposed by Esping-Andersen (1990), in particular the idea of a welfare mix, play a major role in the development of health system types.

In the following section, I review three of the most influential health typologies and highlight the theoretical dimensions the authors used for developing different system types. One of the earliest categorizations of health care systems was developed by the OECD (1987) who distinguish systems along three dimensions: (1) access to care measured by the degree of coverage; (2) funding principle, for example taxation, public and private insurance; and (3) the public-private mix of care provision. Based on these criteria, three system types were developed. In countries with a *national health service* (NHS), for example in the UK and Sweden, coverage is universal (based on residency requirements), funding is based on taxation and the provision of care is almost exclusively public. At the other extreme is the *private insurance system* as it exists in the USA in which both funding and care provision is organized through private actors and institutions. In most cases, private health insurance is purchased by the employer who can offer an occupational healthcare plan to the employees. Due to its voluntary nature, this system leaves a considerable number of people without health insurance and therefore has a low degree of universality. A medium position is taken by the *social insurance* countries such as Germany and Austria. In this system type, we find a quasi-universal access to care through employer-based but compulsory health insurance. Funding is organized by non-profit insurance funds and with regard to service provision we find a mix of public and private providers. The theoretical dimension highlighted as being central to the development of these types is whether funding is based on taxation, public or private health insurance.

The next milestone in healthcare system classifications was Moran's (1999, 2000) typology of healthcare states. He stressed the role of the state and used three indicators for the development of his classification, namely the governance of consumption, provision and technology. His analysis results in four families of healthcare states, which resemble the OECD system types. The *entrenched command and control states* include the NHS countries. They are characterized by universal access, a high degree of state control over costs and providers (hospitals and doctors), as well as a moderate level of control of health

Table 1 Theoretical dimensions of healthcare typologies

<i>Dimensions</i>	<i>OECD (1987)</i>	<i>Moran (2000)</i>	<i>Bambra (2005)</i>
Funding	Source of entitlement	Degree of cost control	Percentage of private health expenditure
Provision	Public–private ownership	State control over doctors and hospitals	Private hospital beds
Technology	–	State control	–
Access	Coverage	Coverage	Coverage

Sources: author's own depiction.

technology. The USA are the only real example of a *supply state*, which has non-universal access and a low degree of state control in all three arenas. The *corporatist states* conform to the social insurance countries. Access is quasi-universal, the degree of control of costs and providers is moderate, and control of health technology is rather low. The fourth type contains the Southern European countries, which also have a national health service but a low regulative capacity in all three realms. As a result, these *insecure command and control states* can de facto not guarantee the formally existing rights. Even though Moran (2000) mainly reproduces the OECD types, he shifts the focus from organizational principles to government regulation and includes the regulation of health technology as an additional dimension.

The last typology to present is developed by Bambra (2005) who explicitly borrows Esping-Andersen's (1990) concept of de-commodification and applies it to healthcare services. However, both her definition of 'health de-commodification' and the empirical indicators represent a combination of the principles of de-commodification and welfare mix. Her definition of health de-commodification encompasses 'the extent to which an individual's access to health care is dependent upon their market position and the extent to which a country's provision of health is independent from the market' (Bambra, 2005: 33). The first part of this definition refers to the principle of de-commodification, while the form of care provision reflects the principle of welfare mix. This borrowing of Esping-Andersen's (1990) principles is also present in the empirical indicators she uses for the 'health de-commodification index':

- (1) private health expenditure (% GDP);
- (2) private hospital beds (% total bed stock);
- (3) the percentage of the population covered by the health care system.

The first and the second indicator clearly represent measures of a public–private mix in funding and services provision and thereby reinforce the theoretical dimensions used by prior health typologies. The third indicator 'the percentage of the population covered by the health system' is an adequate measure of health de-commodification since it reflects an individual's access to care. This measure has been used in the previous two typologies as well. Even though coverage is a central measure for access to care, it reflects only a part of the de-commodification of healthcare as will be shown in the next section.

Table 1 summarizes the indicators used by these three authors to develop health system types. Even though the precise definitions differ, all three typologies use the public–private mix in the realms of funding and service provision as classification criteria. Moran (2000) adds state control of health technology. Similarly, all three typologies bring in a second dimension which is the degree of coverage or universality of the system.

De-commodification and access to healthcare

The overview of the existing health typologies has shown that the public–private mix in funding, provision and regulation has conceptually dominated the comparison of health systems. While recently there have been first attempts of including the patient as a recipient of health services in the conceptual development of health typologies (Wendt et al., 2009), a clear theoretical specification of the relationship between patient and system as well as an elaborate measurement of this relationship is lacking. To fill this gap, I propose a classification that takes access to healthcare services as its basis and thereby strengthens the position of the patients' perspective. The aim is not to develop an alternative

to the existing typologies but to highlight ‘access to care’ as one dimension that has been widely neglected in earlier studies. The starting point of this endeavour is Esping-Andersen’s principle of de-commodification, which highlights the recipients’ perspective in income transfer programmes.

De-commodification describes ‘the emancipation from market dependency’ (Esping-Andersen, 1990: 47) and refers to the degree to which transfers allow people to live without labour income. A direct application of this concept to the sick person is difficult, since the main aim of healthcare is to restore health irrespective of the labour market. However, if we look at Esping-Andersen’s (1990: 47) operationalization of de-commodification, there is a potential for an analogy in health services: ‘A programme can be seen to harbour greater de-commodification potential if access is easy, and if rights to an adequate standard of living are guaranteed regardless of previous employment record, performance, needs-test, or financial contribution.’ De-commodification in a more general sense refers to the access to welfare programmes defined by the benefit levels, and the conditions under which benefits can be accessed. Thus, when we apply this concept to healthcare services, we need to look at the institutional regulations that define the conditions for access to care and the potential services that can be received. This approach differs from Bamba’s (2005) concept of health de-commodification. It is more closely oriented towards the original conceptualization of the principle of de-commodification as a distinct dimension from welfare mix (Esping-Andersen, 1990). Next, I explore Esping-Andersen’s indicators of de-commodification and how they can be applied to the access of ambulatory health services in more detail.

Conditions

The first indicator of Esping-Andersen’s (1990: 49) de-commodification index refers to the conditions under which benefits can be received. This includes eligibility criteria such as the assessment of income levels and needs tests. As a matter of fact, in all system types people usually receive only healthcare when a need in form of a health problem exists. Yet, in contrast to a needs test for social welfare, the examination and diagnosis of a health problem already represent a part of the provided health service. However, we find a needs test in healthcare systems with regard to

specialist care. In countries with a gatekeeping system, access to specialist care is not free but can only be obtained with a referral from one’s general practitioner (GP) who assesses the health problem and decides if specialist care is necessary (Groenewegen et al., 2002). In systems without gatekeeping, patients can directly contact both GPs and specialists (and usually also several of them for the same problem). Consequently, gatekeeping systems introduce a need assessment for specialist care in health systems. Income tests as a requirement for access to health services do not exist in Western and Central Europe. In the USA, access to the Medicaid programme is restricted to the poor (Moran, 2000).

Disincentives

Most welfare programmes contain built-in disincentives in order to reduce the take-up of benefits. In Esping-Andersen’s (1990: 54) de-commodification index ‘the number of waiting days before benefits are paid’ were used as a measure for disincentives for sickness and unemployment payments. Even though several health systems face problems of waiting times, these are not institutionalized as a strategy to reduce service use, for example that people must have had pain for over a week before they can see a doctor.¹ Instead, many countries have introduced financial (dis-)incentives for reducing the utilization of healthcare (Robinson, 2002). While all countries have established some form of cost sharing, they differ substantially both in the services requiring cost sharing (doctor visits, pharmaceuticals, inpatient care) and the level of cost sharing (Mossialos and Thomson, 2003).

Benefit level

Furthermore, Esping-Andersen (1990) assesses the level of benefits that are granted based on income replacement ratios. Measuring the benefit level for (health) services is more complicated. The most accurate measure would compare the definition of the benefit packages covered by the health system. However, many services are not explicitly specified in some countries even though they might be covered (Polikowski and Santos-Eggimann, 2002). This makes a sustained comparison of benefit packages very challenging. Some countries do not even have a list of covered benefits, especially those with a NHS,

Table 2 Indicators for de-commodification applied to access to healthcare

	<i>De-commodification</i>	<i>Access to care</i>
Conditions	Needs tests, income tests	Gatekeeping
Disincentives	Waiting days	Cost sharing
Benefit level	Replacement rates	Number of doctors
Weight: Universality	Coverage of social security programme	Coverage of health system

Sources: author's depiction of Esping-Andersen (1990).

for example Sweden (Hjortsberg and Ghatnekar, 2001). Therefore, the availability of medical providers and technology was chosen as an alternative proxy measure for the benefit level. It represents the potential for a wide range, and intensity of services and is a more proximate measure than health expenditure since a high monetary input is not necessarily translated into a higher level of service provision (Wendt and Kohl, 2009). Moreover, supply measures complement the access indicators since one can only take advantage of a free (unregulated) access to care if a health service is available.

Universality

The universality of the system or the degree of coverage is used by Esping-Andersen (1990) as a weight for the de-commodification index. The degree of coverage is also the measure used for access in the three health system typologies presented above. It represents a very narrow conceptualization of access because 'even in systems of universal coverage, serious access barriers remain' such as legal regulations and cost sharing (Busse et al., 2006: 4). While from a theoretical perspective coverage is crucial, empirically this indicator is not fruitful because in all Western countries with the exception of the USA, a level of coverage of 99% of the population or more has been achieved (OECD, 2004). This high universality distinguishes healthcare from the welfare programmes used by Esping-Andersen (1990). Due to this lack of variance, the degree of coverage is not useful for differentiating system types and is consequently not included in the subsequent empirical analysis.

Indicators

In this section, I present the empirical indicators for the three dimensions of access specified above: gatekeeping, cost sharing and supply. Provider density and medical technology measures are from the OECD

Health Data 2009. Information on gatekeeping and cost sharing was collected based on a coding scheme, which was applied to a variety of country reports and comparative studies. The most important sources were the comparative tables from MISSOC and the WHO country reports *Health Care System in Transitions* (for a full list, please contact the author). In order to check for the validity of the indicators, they were evaluated by country experts.² The attempt was to include as many European countries as possible based on the availability of adequate data and country experts.

The indicators collected for 16 European countries reflect the regulations that were in force in 2003 and not the current status. Even though these indicators refer to institutional regulations, for some countries they represent country averages. In particular, in decentralized systems such as Sweden and Italy, but also in countries with different insurance arrangements, for example Austria, information on gatekeeping and cost sharing reflect the average or dominant way of regulation. This means that not all citizens are subject to these specific regulations.

Legal regulations – gatekeeping

Gatekeeping or family doctor systems are institutional regulations that structure patients' entry and passage through the system. The gatekeeper reflects 'a defined port of entry' (Gervas et al., 1994: 311), usually the GP, who navigates the patient through the healthcare system (Calnan et al., 2006). Thereby he or she controls the access to secondary care through the referral system with the aim to reduce unnecessary use of expensive specialist care (Pihl et al., 2005). In most studies, gatekeeping is measured as a dichotomous variable. Based on Wasem et al. (2003), I argue that gatekeeping consists of several characteristics. The four indicators presented in Table 3 show that gatekeeping can be established to different degrees.

The first component 'registration with a GP' captures whether people are forced to set their choice of GP (for a certain period of time) who coordinates their care and regulates the access to specialists. This indicator is one of the constitutive elements of 'gatekeeping' which has been widely used in previous studies for assessing access regulations (for example Gervas et al., 1994; Ettelt et al., 2006). Ettelt et al. (2006) demonstrate that the restrictiveness of GP registration increases when the GP can only be selected in a predefined geographical area. As shown in Table 3, countries which do not have a GP registration also do not restrict the area of choice, except for Finland. The combination of GP registration and limitation of geographical area is found, for example in Denmark, Italy, and the UK, while in the Netherlands, Poland and Sweden the choice of a GP is geographically unrestricted.

The next indicator refers to the remuneration of the GPs. Wasem et al. (2003) argue that payment by capitation is an essential prerequisite of a functioning gatekeeping system. Under capitation schemes, doctors receive a fixed amount for each patient on their list independently of services provided. The idea is that this flat-rate 'motivates doctors to practice in a way that encourages patients to join their list' (Or, 2000: 16).

The last indicator refers to the control of access to the secondary care market (Scott, 2000), which includes specialists in private practices and specialists working in hospital outpatient departments. The most restrictive way of regulation is that patients need a referral in order to access secondary care. In this case, there are no legal alternatives to see a specialist without a referral or paying the whole fee out-of-pocket. In some countries, people can use a referral but also skip the referral system by accepting a higher co-payment (Ettelt et al., 2006). This 'skip & pay' procedure is established in Austria, Belgium and Sweden. While in Austria the specialist visit is free when referred, in Sweden and Belgium a higher than the regular co-payment is charged when people skip the referral system. In Sweden for example people pay €24 for a specialist visit without a referral but only €13 when being referred. The least restrictive pole on this indicator is represented by the Czech Republic, France, Germany, Greece and Switzerland where people have free (not-referral based) access to specialist care.

Financial incentives – cost sharing

The concept of moral hazard assumes that public provision of health services encourages utilization

Table 3 Indicators for gatekeeping

<i>Country</i>	<i>GP registration</i>	<i>Geographic restriction</i>	<i>GPs paid by capitation</i>	<i>Access to specialist care</i>
Austria	–	–	+	Skip & pay
Belgium	–	–	–	Skip & pay
Czech Republic	–	–	+	Free
Denmark	+	+	+	Referral
Finland	–	+	–	Referral
France	–	–	–	Free
Germany	–	–	–	Free
Greece	–	–	–	Free
Italy	+	+	+	Referral
Netherlands	+	–	+	Referral
Poland	+	–	+	Referral
Portugal	+	+	–	Referral
Spain	+	+	–	Referral
Sweden	+	–	–	Skip & pay
Switzerland	–	–	–	Free
United Kingdom	+	+	+	Referral

Notes: presented regulations are from 2003; + = present, – = not present.

Sources: MISSOC-INFO 03/2002, MISSOC Tables 2003, WHO country reports (see <http://www.euro.who.int/countryinformation>).

that 'exceeds socially beneficial levels' (Thomson and Mossialos, 2004: 20). Cost sharing measures create financial disincentives to use health services, which ideally exert their strongest effect in cases of minor health problems. In order to encompass cost sharing for the ambulatory sector, I collected information on *cost sharing for GP visits* and *for specialist visits*. The challenge in this task is that there are several ways to define the payment for a doctor visit (Schneider et al., 2004). In some countries, the user pays a fixed fee for each doctor visit (*co-payment*), for example in Portugal €2. Another cost sharing instrument is *co-insurance* where the user pays a certain percentage of the total costs, for example in France 30% of the fee for a GP visit. The third form of cost sharing, the *deductible*, requires the user to pay all costs up to a certain limit, for example in Switzerland users pay all bills up to €200.

Thus, the challenge was to develop a single scale on which countries with different cost sharing arrangements can be located. The approach chosen to tackle this task follows in several steps: first, for co-insurance countries the absolute amount could be obtained by applying the co-insurance rate to a standard fee (Belgium and France). Second, I constructed a scale with a range from 0 to 2, 0 indicating no cost sharing, 1 refers to the country with the lowest amount of cost sharing and 2 to the country with the highest amount of cost sharing. The range stresses the qualitative difference between having implemented cost sharing and no cost sharing. For instance, the difference between €0 and €3 is much more significant than the one between €3 and €6. The first difference determines whether actual use of care is connected with costs for the patient or available free of charge while the second difference is only a difference in the amount to be paid.

Third, taking the absolute amounts for one doctor visit can be misleading because this does not take the different periods of validation and the effects of cost sharing maximums into account. In Austria, for instance, an initial charge of €3.60 is paid at the first doctor visit but this voucher is valid for one-quarter of the year (independent of the number of visits) as opposed to Belgium where €4.50 is charged for each visit. In order to incorporate this complexity in the scale, I developed two theoretical scenarios for each indicator. These scenarios are supposed to capture the impact of cost sharing on both persons with only few visits ('low user') and people with a

high frequency of visits ('high user'). The low user scenario reflects the costs incurring at the first visit, the high user scenario is set at 10 GP and five specialist visits.³ Table 4 illustrates how the scenarios take different validation periods and out-of-pocket maximums into account. In Austria where co-payments are valid for one-quarter of the year patients pay only four times the charge for the first visit compared to 10 times the amount for the first visit in Belgium or France. In Sweden, the scenario accounts for the out-of-pocket maximum: as a result the fee for 10 GP visits is not the decuple of €13 but the maximum which is €97.

Before the values were transformed into scores, they were adjusted on the base of purchasing power parities. I illustrate the assignment of countries on the scale using the score for the first GP visit (see Table 4). As was mentioned before, the countries without cost sharing for GP visits are assigned to a value of 0, for example Denmark and the Netherlands. 1 is received by the country with the lowest co-payment, which is Portugal with 2.4. The country in which people have to pay 100% of the costs is set to 2. Thus, Switzerland fixes the upper end point at 19.5.⁴ The next step is then to develop the intervals on the scale. The scale ranges from 1 to 2, which reflect the amounts of 2.4 and 19.5. For deriving the intervals, 2.4 was subtracted from 19.5 and then divided by 10. The resulting 1.7 represents the difference between the 0.1 intervals on the scale. For example 1.1 has a value of 4.1 ($2.4 + 1.7$) and 1.2 a value of 5.8 ($4.1 + 1.7$). The countries are now assigned to the value on the score which is closest to the amount of their co-payment estimate. Belgium, for instance, has a value of 4.4. This amount is closest to 4.1, the respective value for a 1.1 on the scale. France with a 5.4 co-payment, however, is closer to 5.8 which marks the 1.2 position on the scale. In Sweden, patients have to contribute with 9.1 to a GP visit. This amount is closest to 9.2 which is the respective value for 1.4 on the scale. The assignment of countries on the other three scales was done accordingly.

In addition to institutional cost sharing, informal payments and bribes create further access barriers. This is the case in Greece, Poland, and the Czech Republic (Davaki and Mossialos, 2005; Kuszewski and Gericke, 2005). However, estimates for the amounts that are informally paid are not available. Therefore these payments cannot be incorporated in the cost sharing index.

Table 4 Indicators for cost sharing

Country	1st GP visit	1st GP visit (ppp)	GP 1 score	10 GP visits	10 GP visits (ppp)	10 GP score	1st specialist visit	1st specialist visit (ppp)	SP 1 score	Five specialist visits	Five specialist visits (ppp)	5 SP score
Austria	€3.6	3.5	1.1	€14.5	13.9	1	€3.6	3.5	1	€14.5	13.9	1
Belgium	€4.5	4.4	1.1	€45.4	43.7	1.2	€6.1	5.8	1.1	€30.3	29.2	1.1
Czech Republic	—	0	0	—	0	0	—	0	0	—	0	0
Denmark	—	0	0	—	0	0	—	0	0	—	0	0
Finland	€11.0	9.2	1.4	€33.0	27.6	1.1	€22.0	18.4	1.4	€110.0	92.0	1.5
France	€6.0	5.4	1.2	€60.0	54.1	1.3	€6.9	6.2	1.1	€34.5	31.1	1.2
Germany	—	0	0	—	0	0	—	0	0	—	0	0
Greece	—	0	0	—	0	0	—	0	0	—	0	0
Italy	—	0	0	—	0	0	€36.0	35.6	1.9	€180.0	178.2	2
Netherlands	—	0	0	—	0	0	—	0	0	—	0	0
Poland	—	0	0	—	0	0	—	0	0	—	0	0
Portugal	€2.0	2.4	1	€20.0	23.9	1.1	€2.0	2.4	1	€10.0	12.0	1
Spain	—	0	0	—	0	0	—	0	0	—	0	0
Sweden	€13.0	9.1	1.4	€97.0	80.2	1.5	€24.0	18.1	1.4	€97.0	80.2	1.4
Switzerland	100%	19.5	2	€200 +10%	147.5	2	100%	39.0	2	€200 + 10%	147.5	1.8
United Kingdom	—	0	0	—	0	0	—	0	0	—	0	0

Notes: presented regulations are from 2003; ppp = purchasing power parity. Calculations are based on more decimal digits than displayed.

Sources: MISSOC-INFO 02/2005, MISSOC Tables 2003, WHO country reports (see <http://www.euro.who.int/countryinformation>), (Schneider et al., 2004).

Table 5 Medical personnel/technology-to-population ratios for 2003

Country	per 1000 population				per 1 million population	
	Number of physicians	Number of GPs	Number of specialists	Number of nurses	Number of MRI scanners	Number of CT scanners
Austria	3.4	1.4	2.0	7.2	13.6	27.2
Belgium	4.0	2.1	1.9	14.8	6.8	30.6
Czech Republic	3.5	0.7	2.8	8.0	2.5	12.6
Denmark	2.9	0.7	1.1	13.6	9.1	14.5
Finland	2.7	0.7	1.4	9.6	13.0	14.0
France	3.4	1.7	1.7	7.3	2.8	8.3
Germany	3.4	1.5	1.9	9.7	6.2	14.0
Greece	4.8	0.3	3.3	3.3	2.3	17.1
Italy	4.1	1.0	2.7 ^a	5.4	11.9	23.9
Netherlands	3.5	0.5	0.9	9.4	6.2	7.1
Poland	2.4	0.1	1.9	4.8	1.0	6.3
Portugal	3.2	1.6	1.6	4.2	3.9	12.8
Spain	3.2	0.8	1.9	7.5	7.3	13.0
Sweden	3.4	0.6	2.4	10.4	7.9	14.2
Switzerland	3.7	0.5	2.5	14.3	14.2	18.0
United Kingdom	2.2	0.7	1.5	10.2	4.4	6.7

Notes: In some countries GPs and specialists do not add up to the total number of physicians since further doctors that work, for instance, for public health authorities, are included.

Sources: OECD Health Data 2009, ^aSchneider, Hofmann et al. (2004).

Supply – provider density and medical technology

Institutional regulations are one dimension on which countries differ in terms of access to care. However, countries also differ on the potential of ambulatory services that can be provided based on existing personnel resources and medical technology (Gulliford et al., 2003). To assess this difference, I look at provider density using the number of all physicians, GPs, specialists and nurses per 1000 population. The availability of medical technology is measured by the number of magnetic resonance imaging (MRI) and computed tomography (CT) scanners per 1 million population. Table 5 shows that countries which have a similar value on the overall physician-to-population ratio can differ tremendously in the distribution between GPs and specialists. Greece, on the one hand, is the country with the highest physician density and has only 0.3 GPs per 1000 inhabitants, but 3.3 specialists. Belgium, on the other hand, is also on the upper end of physician density with four doctors per 1000 inhabitants, but has a relatively equal distribution between GPs (2.1) and specialists (1.9). For the number of nurses we see a South/East versus North/West divide with

3.3 nurses per 1000 population in Greece at the lower end and more than 14 in Switzerland, and Belgium at the upper end. The distribution of medical technology shows a similar country pattern as the physician-to-population ratios with a high availability of scanners in Belgium, Switzerland, and Italy and a low number in Poland, and the UK.

Cluster analysis

Cluster analysis has emerged as the standard procedure for classifying countries into overarching regimes or system types (Gough, 2001; Powell and Barrientos, 2004; Jensen, 2008). Gough (2001: 169) evaluates cluster analysis as ‘robust, meaningful and simple’ and therefore recommends its application to the development of regime types.

In general, cluster analysis is a method that combines cases that are most similar to each other, thereby developing homogenous clusters that can be differentiated from each other. It is a useful method, because it can take complex metric information from several indicators into account in making the decision about the similarity or dissimilarity of cases (Everitt et al., 2001). I apply agglomerative hierarchical clustering. This variant starts out with one

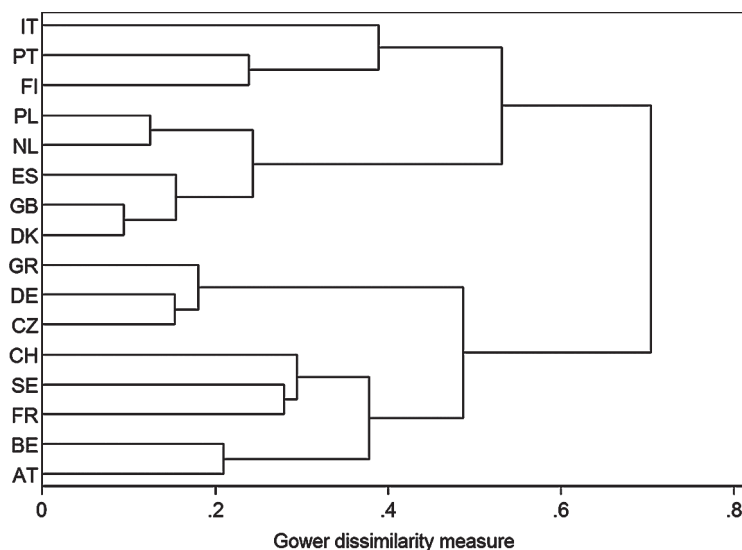


Figure 1 Hierarchical cluster analysis: dendrogram using complete linkage and all variables

cluster for each case and then successively merges these cases into clusters and combines similar ones, until all cases are included in one cluster. Since the goal is to obtain several clusters, the important question is when to stop the clustering procedure. For this decision, a dendrogram (see Figure 1) and the Calinski/Harabasz pseudo-F stopping rule were used.

Most studies applying cluster analyses to derive regime types are based on expenditure data or other continuous measures. However, in this study only some of the measures have a metric measurement level while others are coded as binary variables.⁵ Therefore, I use the Gower dissimilarity coefficient as a proximity measure that works with a mix of binary and continuous data (Gower, 1986; Everitt et al., 2001). Based on the complete linkage procedure, both the dendrogram and the stopping rule indicate that four is the optimal number. However, it is not so much the number of clusters that we are interested in but the countries clustered together (Arts and Gelissen, 2002). In order to test the robustness of the resulting country clusters, several sensitivity analyses were performed using a hierarchical introduction of cost sharing indicators (once purchasing power parities and once the transformed scores). In addition, the provider density measures and the cost sharing scores were

recoded into dummy variables and binary cluster analyses using the simple matching and the binary Jaccard similarity coefficient were calculated. All these cluster analyses were performed using both the average linkage and complete linkage procedure. Comparing the results of these different analyses indicates robustness of the results since a similar clustering of countries can be found in all cluster solutions.⁶

- **Cluster 1** consists of Austria, Belgium, France, Sweden, and Switzerland. These cases all either have no or only minor gatekeeping characteristics but regulate access instead through cost sharing for both GP and specialist visits. Even though gatekeeping plays a minor role in these countries, their service profile is characterized by a high availability of GPs, nurses, and also of medical technology.
- **Cluster 2** includes the Czech Republic, Germany and Greece. These countries use neither gatekeeping nor cost sharing as instruments for access regulation. In addition, they are among the countries with the highest density of medical providers with a particularly high density of specialists.
- **Cluster 3** covers Denmark, the Netherlands, Poland, Spain, and the UK as the strong gatekeeping countries. Their reliance on institutional

Table 6 Description of access regime clusters

	Gatekeeping	Cost sharing	Physician density	GP density	Specialist density	Nurse density	MRI scanner	CT scanner
<i>Cluster 1</i> AT, BE, CH, FR, SE	None/ moderate	Moderate/ high	3.6	1.3	2.1	10.8	9.1	19.7
<i>Cluster 2</i> CZ, DE, GR	None	None	3.9	0.8	2.7	7.0	3.7	14.6
<i>Cluster 3</i> DK, ES, GB, NL, PL	High	None	2.8	0.6	1.5	9.1	5.6	9.5
<i>Cluster 4</i> FI, IT, PT	High	Moderate	3.4	1.1	1.9	6.4	9.6	16.9

regulation to specialist care coincides with no cost sharing for doctor visits. There also seems to be a regulative emphasis on provider density and technology because these countries show a low availability of both medical personnel and technology (except for nurses).

- **Cluster 4** comprises Finland, Italy, and Portugal. These countries share strong gatekeeping features but also institutionalized cost sharing arrangements, thereby representing a mix of both instruments of access regulation. The physician densities are higher than in the other gatekeeping countries (Cluster 3) but lower than in the other countries. Finally, this cluster shows the highest availability of medical technology.

Conclusion

The central focus of existing healthcare typologies is the public-private mix in funding, provision and regulation of healthcare (OECD, 1987; Moran, 1999; Bambra, 2005). This article proposed a complementary perspective to the comparative analysis of health systems based on the concept of healthcare access. In line with Esping-Andersen's de-commodification principle I defined access as the conditions under which services can be accessed, the disincentives to utilize services, and available type of services. Empirical indicators of these three dimensions for 16 countries were introduced into a cluster analysis. As a result, four distinct and robust types of health care access could be identified.

First, there are the *financial incentive states*, which mainly rely on cost sharing to regulate access to doctors (Austria, Belgium, France, Sweden, and Switzerland). On the opposite side are the *strong gatekeeping and low supply states* (Denmark, the Netherlands, Poland, Spain, and the UK). These countries have no cost sharing measures established for doctor visits. All countries in this cluster are characterized by extensive gatekeeping arrangements regulating access to specialist care and a very low number of healthcare providers and medical technology (except for nurses). The third group can be characterized as the *weakly regulated and high supply states*. The Czech Republic, Germany and Greece have almost no gatekeeping features and no cost sharing for doctor visits. In addition to this low level of access regulation, these countries also have

the highest number of physicians and of specialists in particular. The fourth cluster consists of Finland, Italy and Portugal, which represent a *mixed regulation type* since unlike all other countries they combine gatekeeping features with regular cost sharing.

This cluster solution reflects a certain overlap with existing healthcare typologies. In NHS countries we find most often established gatekeeping systems and a strong regulation of provider density and medical technology. The strong role of the state in this system type provides the potential for extensive regulations in the healthcare realm (Moran, 1999). In addition, the idea of a needs-based service provision paid by taxation that underlies the NHS also provides a legitimating basis for a restriction of patient access and choice. In contrast, social insurance countries rely on contributions which make the insured perceive healthcare as a right. This decreases the legitimacy of restricting patient access. Thus choice between GPs and specialists is maintained using cost sharing as an incentive-based instrument of access regulation. These countries are also often corporatist systems which restricts their opportunities for regulating the number of providers and medical technology (Moran 1999).

However, in line with previous studies on access regulation (for example, Gervas et al., 1994; Ros et al., 2000), I also find several mixed types, for example a strong gatekeeping system in the Netherlands, a social insurance country. Italy, Portugal, and Finland even constitute a mixed regulation *type* by using both gatekeeping and cost sharing instruments. Although access to specialists is already located with the GP in these countries, patients must pay user charges. This can be an indication that cost sharing is applied not as a regulative instrument but as an additional source for healthcare revenue (Mossialos and Thomson, 2003).

Investigating healthcare access is difficult because data are scarce and thus this study also has important data limitations. The indicators that were used in this study refer to the formally institutionalized conditions and incentives. However, informal practices can both increase or decrease barriers to the system. In Spain and Portugal, for instance, people use emergency rooms as a direct and fast way to obtain specialist care thereby circumventing the gatekeeping system (Rico et al., 2000). Waiting lists and informal payments can also be exploited in order to reduce access to care. While these measures

have a crucial impact on patients access to care, their empirical assessment is difficult and requires more attention. Moreover, national averages cover existing regional differences. Since many systems have shown a trend towards decentralized regulation and report geographic inequities (Davaki and Mossialos, 2005), future analyses could benefit from a lower level of disaggregation.

Despite these limitations, the present study provides a robust clustering of countries in four access types. The differences to typologies based on other system features show that healthcare access is a distinct dimension that is not sufficiently captured by other health system characteristics such as funding principles and the public–private mix. Healthcare access is central for service utilization and satisfaction (Joyce et al., 2000; Mossialos and Thomson, 2003). Therefore, access to care should also receive further attention in comprehensive healthcare taxonomies (see Wendt, 2009, using indicators from this study) because in the end healthcare systems are about providing services to persons in need.

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Notes

- 1 However, waiting times might implicitly function as an access barrier reducing the number of services used (Busse et al., 2006).
- 2 I would like to thank Gwyn Bevan, Viola Burau, Konstantina Davaki, Diana de Graeve, Nina Granqvist, Thomas Gerlinger, Kieke Okma, August Österle, Ana Guillén und Monika Steffen for the evaluation of my indicators.
- 3 These values reflect the 90th percentile (own calculations of survey data).
- 4 According to TARMED, the fee-for-service tariff of Switzerland, a doctor consultation of 15 minutes cost 41 Swiss Francs in 2004 which is about 27 Euros (=19.5 in purchasing power parities). Even though this reflects a minimum price and not an average, a higher value would compress the distribution at the lower end of the scale. Since the purpose of the scale is to show the variability of cost sharing across Europe and not to highlight the peculiarity of Switzerland, I chose the minimum price as the reference value.
- 5 Since access to specialists has three values (free, skip & pay, referral), two binary variables are introduced in the cluster analysis.

- 6 In order to account for the relevance of informal payments, the cluster analyses were run separately excluding the Czech Republic, Greece, and Poland. The consistent result is a two-cluster solution in which Germany forms one cluster with Austria, Belgium, France, Sweden, and Switzerland.

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