



Financial protection in Europe: a systematic review of the literature and mapping of data availability



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ABSTRACT

Background: A comprehensive and context-specific approach to monitoring financial protection can provide valuable evidence on progress towards universal health coverage.

Objectives: This article systematically reviews the literature on financial protection in Europe to identify trends across countries and over time. It also maps the availability of data for regular monitoring in 53 countries.

Methods: Two people independently searched for studies using a standard strategy. Results were extracted from 54 publications and studies analysed in terms of geographical focus, data sources, methods and depth of analysis.

Results: Financial protection varies across countries in Europe; substantial changes over time have mainly taken place in the east of the region. Although the data required for regular monitoring are widely available, the literature presents major gaps in geographical scope – most studies focus on middle-income countries; it is not up to date – the latest year of data analysed is 2011; and cross-national comparison is only possible for a handful of countries due to variation in data sources and methods. The literature is also limited in depth. Very few studies go beyond analysing how many people incur catastrophic or impoverishing out-of-pocket payments. Only a small minority analyse who is most likely to experience financial hardship and what drives lack of financial protection.

Conclusions: The literature provides little actionable evidence on financial protection in Europe.

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1. Introduction

1.1. What is financial protection?

Universal health coverage ensures everyone can use the quality health services they need without experiencing financial hardship [1]. People experience financial hardship when out-of-pocket payments – formal and informal payments made at the time of using any health care good or service – are large in relation to ability to pay [2]. Even small out-of-pocket payments can cause financial hardship for poor households and those who have to pay for long-term treatment such as chronic medications [2]. Because all health sys-

tems involve a degree of out-of-pocket payment, financial hardship can be a problem in any country.

Where health systems fail to provide adequate financial protection, households may not have enough money to pay for health care or to meet other basic needs. Lack of financial protection can therefore lead to a range of negative health and economic consequences, potentially reducing access to health care, undermining health status, deepening poverty and exacerbating health and socioeconomic inequalities. Recognising this, the World Health Organization (WHO) and the World Bank have long regarded financial protection as a core dimension of health system performance assessment [3]. The Sustainable Development Goals adopted by the United Nations in 2015 also include financial protection as a measure of universal health coverage [4].

1.2. How is financial protection measured?

Financial protection is measured using two well-established and distinct indicators: catastrophic and impoverishing out-of-pocket payments. Both indicators require data from household income or expenditure surveys.

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Catastrophic spending occurs when the amount a household pays for health care out of pocket (the numerator) exceeds a pre-defined share of its ability to pay for health care (the denominator), which may make it difficult for the household to meet other basic needs [5]. It is measured in different ways, with metrics varying in how they define ability to pay for health care.

The simplest catastrophic metric defines ability to pay for health care as a household's total income or consumption – in other words, all of a household's available resources. This is known as the **budget share approach** [6].

So-called capacity to pay approaches define ability to pay for health care as resources remaining after accounting for household spending on basic needs, most commonly using food as a proxy for basic needs. The **actual food spending approach** deducts a household's actual spending on food from its total consumption and calculates catastrophic spending based on the remaining amount [6].

The **normative food spending approach** goes one step further and calculates a standard amount households need to spend on food, deducts this from a household's total consumption and calculates catastrophic spending based on the remaining amount [7]. In practice, it is only a partial adjustment to the actual food spending approach because if a household's actual food spending is below the standard amount, then actual food spending is deducted rather than the higher, standard amount.

Catastrophic metrics can also differ in whether they use household consumption, expenditure or income as the denominator. Most studies use consumption or expenditure where available, because consumption is typically regarded as a more reliable measure of welfare than income [8]. Different metrics are associated with different thresholds. The budget share approach tends to use thresholds of 10% and 25%, while the other approaches tend to use thresholds of 25% and 40%.

Impoverishing health spending provides important information regarding the impact of out-of-pocket payments on poverty [2]. It is measured by looking at a household's position in relation to a pre-defined poverty line before and after incurring out-of-pocket payments. A household is considered to be impoverished if its consumption or income is above the poverty line before out-of-pocket payments and below it after out-of-pocket payments. Metrics differ in the type of poverty line they use. Absolute poverty thresholds may include the World Bank's international poverty line (currently \$1.90 per person per day in purchasing power parity) or national poverty lines based on the World Bank's poverty assessment (PA), food poverty (cost of minimum food requirements) or basic needs (current cost of a basket of goods thought to satisfy minimum biological needs) [9]. Relative poverty lines may be based on income (for example, the European Union's threshold of 60% of median income) or reflect household spending on basic needs [7].

1.3. Why is monitoring financial protection useful for policy?

Measuring the incidence of catastrophic and impoverishing out-of-pocket payments over time using nationally representative data answers questions about national and cross-national health system performance: *How many people experience financial hardship? How has this changed over time?* To understand what drives financial hardship, and how it can be addressed, requires a more comprehensive analysis of the same data, focusing on additional questions: *Who is most likely to experience financial hardship? What types of health care are these people paying for? How has this changed over time?* When the results of this analysis are considered in the context of a given country, to see if it is possible to link results to policies, it may be possible to generate actionable evidence at the national level. If this type of monitoring is then undertaken system-

atically across countries, it can help to identify factors associated with stronger and weaker performance, providing policy guidance at regional and global levels.

In summary, policy-relevant monitoring of financial protection involves the use of nationally representative data; analysis of the incidence (how many households?), distribution (which households?) and drivers (which health services?) of financial hardship over time; and some attempt to discuss and interpret results in the context of national policy developments.

1.4. The aims and content of this article

This article has three aims. First, it maps the availability of data for financial protection analysis in Europe. Second, it systematically reviews the empirical literature on financial protection in Europe to identify trends across countries and over time. Third, it identifies gaps in the scope and depth of the empirical literature and comments on its ability to inform policy. Throughout, Europe refers to the 53 countries in the WHO European Region.

The article is structured as follows. Section 2 sets out the methods used. Section 3 presents results; it starts with the mapping of data availability, goes on to analyse the empirical literature and then analyses the financial protection results extracted from the literature. Section 4 discusses findings and suggests ways of improving the monitoring of financial protection in Europe.

2. Methods

2.1. Data mapping

To assess the availability of data for financial protection analysis, we identified the data sources most frequently used in the empirical literature and conducted the following searches:

- websites of national statistical offices (NSOs) in 53 countries for information on household income and expenditure surveys
- the Eurostat website for information on household budget surveys in European Union (EU) countries
- websites associated with international surveys on household income or expenditure that include household spending on health care

These searches were not intended to be exhaustive. Once we found that a country had conducted a national (as opposed to international) household expenditure survey in the last five years, we did not look for additional sources of data.

2.2. Systematic review of the empirical literature

To identify empirical literature on financial protection, we undertook a systematic review of published literature on catastrophic and impoverishing out-of-pocket payments in Europe.

We used the following search engines: PubMed, Scopus, the World Bank E-Library and the World Bank Open Knowledge Repository. We also hand searched the WHO List of Online Publications and the WHO/Europe List of Health Financing Documents. We looked at World Bank and WHO databases because these two international organisations explicitly include financial protection in their health system performance frameworks, unlike other international organisations working on health systems in Europe (the European Commission and the OECD). In our search we used key phrases such as out-of-pocket expenditure, catastrophic health expenditure, impoverishing health expenditure and the names of countries in the WHO European Region. The full search string can be found in Appendix 1. Searches were conducted in November–December 2016, May 2017 and July 2017.

The titles, abstracts and full text of the publications identified were reviewed by two people to determine eligibility based on strict inclusion and exclusion criteria. Inclusion criteria were as follows: academic papers, reports or grey literature published between 1990 and early July 2017; published in English; and involving countries in the WHO European Region. Exclusion criteria were as follows: unpublished documents; documents that did not include their own empirical analysis (but may have cited the results of empirical analysis from other sources); and documents that did not explicitly assess catastrophic or impoverishing out-of-pocket payments. The search process is summarized in Appendix 1.

To analyse the literature, we used the following parameters:

- Nature of publications: number and date of publications; type of publication; author affiliation
- Geographical focus: countries studied; number of countries studied (single-country vs multi-country studies); regional vs global studies
- Type and source of data used to measure financial protection
- Methods used to measure catastrophic incidence: methods; denominator; threshold
- Methods used to measure impoverishing incidence: poverty lines
- Depth of analysis: trends over time; equity analysis – inequalities in the distribution of catastrophic and impoverishing out-of-pocket payments across consumption or income quintiles; drivers – breakdown of catastrophic and impoverishing out-of-pocket payments by health service; context-specific analysis – country-level discussion and interpretation of results

2.3. Analysis of financial protection results

To analyse the results presented in the empirical literature we extracted data on catastrophic and impoverishing out-of-pocket payments from each publication and then reviewed comparable results – those using the same method, denominator and threshold – to identify patterns in incidence; trends over time; equity analysis; and any breakdown of catastrophic or impoverishing out-of-pocket payments by health service. These data are available in Appendix 2. In addition, we link the incidence of catastrophic health spending to out-of-pocket payments as a share of total spending on health at the health system level. Where possible, we comment on any relationship between the method used to measure financial protection and results.

3. Results

3.1. Availability of data for financial protection analysis

Almost every country in Europe has the data required to carry out financial protection analysis, as summarised in Appendix 3 (Table A1). We identified the most common sources of data used in the literature to be:

- National household income and expenditure surveys. In Europe, these are usually referred to as **Household Budget Surveys** (HBS) or **Household Expenditure Surveys** (HES). All EU member states conduct an HBS at least once every five years [10]. Most other countries conduct an HBS at regular intervals, often once a year; the sole exception seems to be Monaco, where we were unable to identify a household income or expenditure survey.
- The World Bank's **Living Standards Measurement Survey** (LSMS) is conducted on an ad hoc basis in 10 countries in the east of the European Region, mainly countries in the Balkans, the Caucasus and Central Asia [11].

- The **Survey of Health, Ageing and Retirement in Europe** (SHARE) focuses on people aged 50 or older in 27 European countries. Six waves of SHARE were conducted between 2004 and 2015, with the seventh currently underway [12].
- The **World Health Survey** (WHS) is a one-time survey conducted in 70 countries between 2002 and 2004, including 30 countries from across Europe [13].

Financial protection analysis requires data that meet the following criteria [7]:

- nationally representative household-level data on total household consumption (spending)
- out-of-pocket payments disaggregated by type of health care good and service
- spending on basic needs such as food, housing and utilities, to determine household capacity to pay for health care
- information on household size and composition
- information on household or individual characteristics such as age, gender and place of residence, for equity analysis

Of the four main sources of data listed above, HBS/HES is the only one that meets all of these criteria and is regularly carried out across almost every country in Europe. LSMS meets the criteria but is limited to middle-income countries and is not carried out regularly. SHARE is not nationally representative, nor does it collect sufficiently detailed information on household consumption, so studies based on SHARE measure out-of-pocket payments against income rather than consumption and are unable to use methods that account for household capacity to pay.

Important variations in these different surveys make it difficult to compare the results of studies using different types of data source within and across countries. The results of studies based on HBS/HES data are more likely to be comparable across countries, but even household budget surveys vary in structure and implementation, so cross-national interpretation warrants caution [14].

3.2. Systematic review of the empirical literature on financial protection

Nature of publications

The systematic search for empirical literature yielded a total of 54 publications, all published between 2003 and 2017 (Fig. 1). The majority of these publications (n=41) are published in academic journals, the most common being *Health Policy* (n=7) and *BMC* (n=4). The next most common publishers are WHO (n=7) and the World Bank (n=7). Two-fifths of the publications (n=22) are authored by individuals affiliated with WHO or the World Bank. The number of publications has increased over time and the international organisations appear to play less of a role in the more recent literature.

Types of study

Fig. 1 and Table 1 give details of the publications included in the review. The majority of publications focus on a single country. The remainder cover multiple countries in Europe ('regional') or in Europe and at least one country outside Europe ('global'). Two regional multi-country publications focus on the Western Balkans and three focus on older people in western Europe, using SHARE data. With the exception of the largest multi-country studies, most global studies focus on middle-income countries (see Fig. 1).

Three-quarters of the publications (n=41) draw on nationally representative sources of data. The most common sources are HBS or HES (n=25), either directly or via the Luxembourg Income Study, LSMS (n=10) and WHS (n=5). Documents published by WHO most commonly draw on HBS or HES data, while those published by the World Bank tend to analyse LSMS data. Only a few publications

Table 1

Summary of the literature on financial protection in Europe, 1990 to mid-2017.

Publication (n = 54)	Country	Survey population	Data source	Years	Time trend	Method	Poverty line	Equity analysis	OOP structure
Nationally representative publications (n = 41)	Of which, single country (n = 26)								
Quintal and Lopes [30]	Portugal	National	HBS	2010–11		NFS	Relative: food share	C: quintiles, regression	Total OOPs only
Özgen Narci, Şahin and Yıldırım [31]	Turkey	National	HBS	2004, 2005, 2006, 2007, 2008, 2009, 2010	Y	BS, NFS	3 absolute international; 2 absolute national (absolute food poverty; absolute basic needs); 1 relative national (relative income)	C: regression; I: quintiles and poverty gap	
Arsenijevic, Pavlova and Groot [26]	Serbia	National	LSMS	2007		BS		C: quintiles	C
Brown, Hole and Kilic [23]	Turkey	National	HBS	2003, 2004, 2005, 2006, 2007, 2008	Y	BS		C: regression	
Yardim, Cilingiroglu and Yardim [32]	Turkey	National	HBS	2003, 2006, 2009	Y	NFS	Relative: food share	C: quintiles; I: quintiles; total OOPs: regression	
Vork et al. [19]	Estonia	National	HBS	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012	Y	NFS	Absolute: national	C: quintiles, regression I: quintiles	C
Kronenberg and Barros [20]	Portugal	National	HBS	2000, 2005	Y	NFS (extended basket)	Relative: income	C: quintiles, regression	C
Murphy et al. [33]	Ukraine	National (WHS), but also provides subgroup estimates	WHS	2003		NFS			
Zoidze et al. [34]:	Georgia	National	HUES, HBS	2007, 2010	Y	NFS		C: quintiles	
Tomini, Packard and Tomini [35]	Albania	National	LSMS	2002, 2005, 2008	Y	BS	Not specified	C: quintiles, concentration index	Total OOPs only
Arsenijevic, Pavlova and Groot [36]	Serbia	National	LSMS	2007		BS	Absolute: basic needs Relative: income	C: quintiles; I: regression	
Giuffrida, Msisha and Barfiava [37]	Tajikistan	National	LSS, Public Service Delivery Survey	2003, 2007, 2009, 2011	Y	AFS	Not specified	C: quintiles, concentration index	

Krutilová and Yaya [25]	Czech Republic	National	HBS	2007, 2008, 2009	Y	BS		Total OOPs: deciles, regression	C
Nur Sulku and Minbay Bernard [38]	Turkey	National	HES	2002–2003 (combined 2 rounds)		BS			C
Aran, Hentschel and Jesko [39]	Turkey	National	HBS	2003, 2004, 2005, 2006, 2007, 2008	Y	BS, AFS	Absolute: basic needs		
Couffinhal et al. [40]	Bulgaria	National	LSMS	2007		BS	Not specified		
Shishkin and Jowett [41]	Moldova	National	HBS	2007, 2008, 2009, 2010, 2011	Y	NFS		C: quintiles	Total OOPs only
Aran et al. [42]	Albania	National	LSMS	2002, 2005, 2008	Y	BS	Absolute: food poverty	C: quintiles; total OOPs: regression	Total OOPs only
Yardim, Cilingiroglu, Yardim [43]	Turkey	National	HBS	2006		NFS	Relative: food share	C: quintiles, regression; I: quintiles	
Dukhan et al. [21]	France	National	FBS	1994–5, 2000–1, 2005–6	Y	NFS	Relative: food share	C: quintiles, regression, concentration index	C
Gotsadze, Zoidze and Rukhadze [44]	Georgia	National	HUES, linked with integrated household surveys	2007		NFS		C: quintiles, regression	Total OOPs only
Maruotti [45]	Italy	National	HES (ISTAT)	2002		AFS	Absolute: national		Total OOPs only
Vork, Saluse and Habicht [22]	Estonia	National	HBS	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007	Y	NFS	Relative: food share Absolute: national	C: quintiles, regression, concentration index; I: quintiles	C
Xu et al. [46]	Latvia	National	HBS	2002, 2003, 2004, 2005, 2006	Y	NFS	Not specified	C: quintiles	
WHO Europe [47]	Georgia	National	HUES	2007		NFS		C: quintiles	
Habicht et al. [48]	Estonia	National	HBS	1995, 2001, 2002	Y	NFS	Not specified	C: quintiles, regression; I: quintiles	Total OOPs only
Nationally representative publications (n = 41)	Of which, multi-country studies (n = 15)								
Zawada et al. [49]	Regional: Denmark, Germany, Poland	National	Statistics Denmark, German Socio-Economic Panel, National Statistics office for Poland	DK, PL 2000, 2004, 2010; DE 2009	Y	BS, NFS		C: concentration index by country	Total OOPs by country

Table 1 (Continued)

Publication (n = 54)	Country	Survey population	Data source	Years	Time trend	Method	Poverty line	Equity analysis	OOP structure
Bredenkamp et al. [50]	Regional: Georgia, Kazakhstan, Latvia, Russian Federation, Turkey, Ukraine	National (WHS)	WHS	2002–2003		BS, AFS	Absolute: national [2]		
Bredenkamp, Mendola and Gagnolati [51]	Regional: Albania, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo	National	LSMS (or equivalents)	Albania 2005, Bosnia and Herzegovina 2004, Montenegro 2004, Serbia 2003, Kosovo 2000		BS	Absolute: PA		Total OOPs by country
Mendola, Bredenkamp and Gagnolati [52]	Regional: Albania, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo	National	LSMS	Albania 2005, Bosnia and Herzegovina 2004, Montenegro 2004, Serbia 2003, Kosovo 2000		BS	Absolute: international, PA		
Bernabé, Masood and Vujicic [53]	Global: Bosnia & Herzegovina, Georgia, Croatia, Czech Republic, Estonia, Kazakhstan, Latvia, Russian Federation, Ukraine	National	WHS	2002–4		NFS	Absolute: national	C: regression (aggregate); I: regression	C: dental care by country; other services aggregate across countries
Wagstaff et al. [18]	Global: Georgia, Kyrgyzstan and Turkey	National	LSMS	Georgia 2001/2006, KGZ 1998/2010, Turkey 1997/2005	Y	BS	Absolute: international		
Baird [54]	Global: France, Israel, Poland, Russia, Slovenia, Switzerland	National	HBS	2010		BS			
Baird [55]	Global: France, Israel, Poland, Russia, Slovenia	National	HBS	2010 (except Switzerland 2004)		BS			
World Health Organization, The World Bank [16]	Global: Bosnia and Herzegovina, Bulgaria, Estonia, France, Georgia, Kyrgyzstan, Latvia, Republic of Moldova, Russian Federation, Tajikistan, Turkey, Ukraine	National	HBS or LSMS, depending on the country	2002–2012 (depending on the country)	Y	BS, NFS	Absolute: international Relative: food Share	C: quintiles (aggregate)	
Saksena, Hsu and Evans [56]	Global: Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Russian Federation, Slovakia, Slovenia, Spain, Turkey and Ukraine. In total: 96 household surveys are used, although results by country only presented for 53	National	WHS	2003		NFS	Not specified		

Saksena, Smith and Tediosi [17]	Global: Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Russia, Slovakia, Slovenia, Spain, Ukraine.	National	WHS	2002–2003		NFS, AFS	Absolute: international Relative: food Share	C: regression (aggregate)	
Xu et al. [24]	Global: many (see appendix)	National	Depends (usually HBS)	1990–2003 depending on country, rounds depend on country	Depends	NFS			
van Doorslaer E et al. [57]	Global: Kyrgyzstan	National	HBS	2000–2001 for Kyrgyzstan		BS, AFS		C: concentration index by country	Total OOPs by country
van Doorslaer E et al. [15]	Global: Kyrgyzstan	National	HBS	2000–2001 for Kyrgyzstan			Absolute: international [2]		
Xu et al. [7]	Global: many (see appendix)	National	Depends (usually HBS)	1991–2000 depending on country		NFS			
Sub-group analysis (n = 13)	Of which, single-country studies (n = 8)								
Skordis-Worrall et al. [58]	Kyrgyzstan	Subgroup	OR	Not specified		BS			
Grigorakis et al. [59]	Greece	Subgroup	OR	2013		BS		C: Concentration index	
Grigorakis et al. [60]	Greece	Subgroup	OR	2012–3		BS		C: Concentration index	Total OOPs only
Arnold et al. [61]	Kyrgyzstan	Subgroup	OR	2010		NFS			
Erus et al. [62]	Turkey	Subgroup	OR	2011		BS			
Łuczak and García-Gómez [63]	Poland	Subgroup	Social Diagnosis questionnaire	2000, 2003, 2005, 2007, 2009	Y	BS	Absolute: basic needs Relative: income	C: concentration index	Medicines only
Melik-Nubaryan, Hayrapetyan and Tadevosyan [64]	Armenia	Subgroup	OR	Not specified		BS			

Table 1 (Continued)

Publication (n = 54)	Country	Survey population	Data source	Years	Time trend	Method	Poverty line	Equity analysis	OOP structure
Yilmaz, Kisa and Younis [65]	Turkey	Subgroup	FS	2005		BS, AFS			
Sub-group analysis (n = 13)	Of which, multi-country studies (n = 5)								
Arsenijevic et al. [66]	Regional: Austria, Belgium, Czech Republic, Denmark, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Spain, Slovenia, Sweden and Switzerland	Subgroup	SHARE	2010–12		BS		C: regression	Total OOPs by country
Palladino et al. [67]	Regional: Austria, Belgium, Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and Switzerland	Subgroup	SHARE	2006–7, 2013	Y	BS		Mean OOPs: quintiles by country	Total OOPs by country
Scheil-Adlung and Bonan [68]	Regional: Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden and Switzerland	Subgroup	SHARE	2004		BS			Total OOPs by country
Goepfel et al. [69]	Global: Russian Federation	Subgroup	WHO SAGE	2007–2010		AFS		C: quintiles by country; concentration index	C: last outpatient visit only
Masood, Sheiham and Bernabé [70]	Global: Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Georgia, Kazakhstan, Latvia, Russian Federation and Ukraine	Subgroup	WHS	2002–2004		NFS		C: regression	C: dental only

Notes: OR = Original research, HBS = household budget survey, HES = household expenditure survey, LSMS = Living Standards Measurement Survey, SHARE = Survey on Health, Ageing and Retirement in Europe, WHS = World Health Survey, BS = budget share, NFS = normative food spending, AFS = actual food spending, C = catastrophic out-of-pocket payments, I = impoverishing out-of-pocket payments, OOP = out-of-pocket payment.

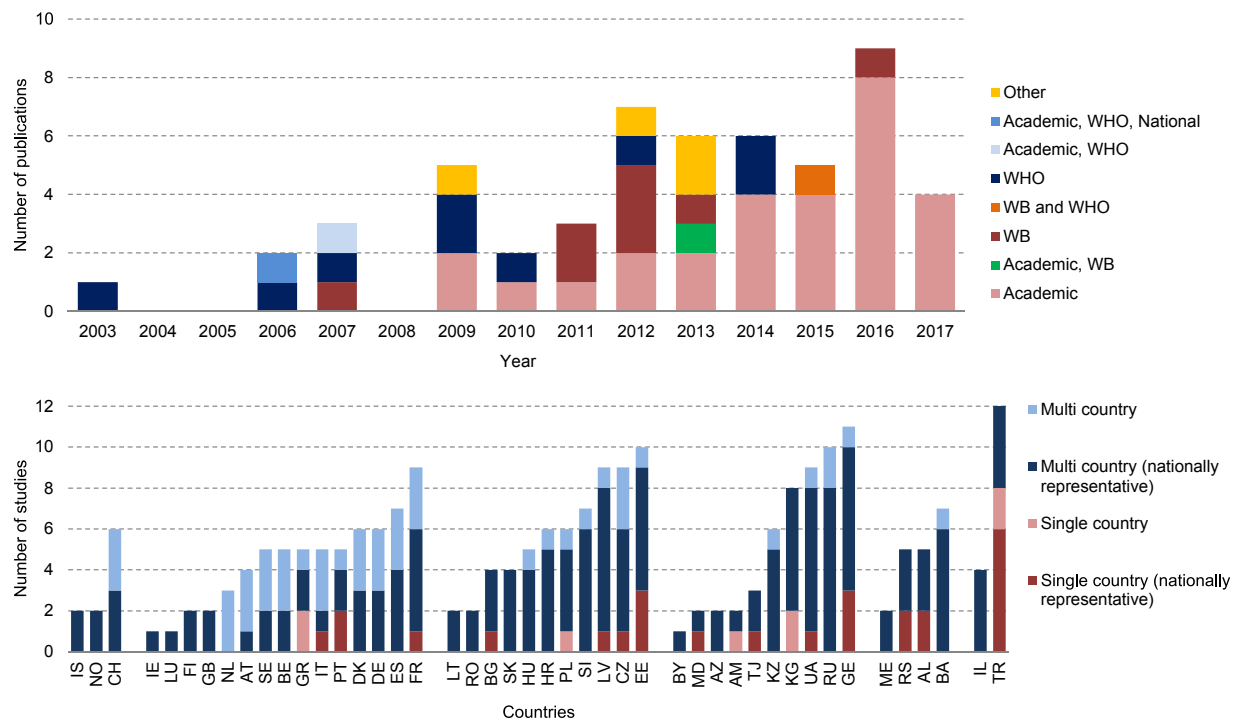


Fig. 1. Number of publications or studies by year, author affiliation and country, 1990 to mid-2017.

Note: No studies identified for Andorra, Cyprus, Malta, Monaco, San Marino, The former Yugoslav Republic of Macedonia, Turkmenistan and Uzbekistan.

Source: Authors' estimates

use recent nationally representative data. Some relatively recent publications are based on WHS data from 2002 to 2004.

The remaining documents ($n = 13$) use non-nationally representative datasets, which means their results may not be generalizable to other contexts. Some focus on a specific type of out-of-pocket payment such as dental or drug expenditures ($n = 4$), people aged 50 and over ($n = 3$) or a sub-group of patients ($n = 2$). Some also draw on original research ($n = 7$) and tend to have small sample sizes; because of this, their results cannot be compared or generalized across countries (for further details, see Appendix 3, Table A2).

Methods used to measure catastrophic out-of-pocket payments

All publications except one [15] analyse catastrophic out-of-pocket payments ($n = 53$). There is significant variation in the methods applied, but two dominate: the budget share method ($n = 29$) and the normative food spending method ($n = 24$). Several publications use multiple methods (see Appendix 3, Figure A1).

Across publications, there is a relationship between methods used and author affiliation. The majority of publications with at least one World Bank-affiliated author use the budget share method ($n = 10$), either alone or in combination with the actual food spending method. All studies with WHO-affiliated authors ($n = 12$) apply a capacity to pay approach, mainly the normative food spending method ($n = 11$).

Studies using the budget share method focus exclusively on middle-income countries, while studies using the normative food spending method also include high-income countries.

The publications use a range of thresholds for catastrophic out-of-pocket payments. Among studies using the budget share method ($n = 29$), the most common threshold used is 10% ($n = 9$); however, the majority ($n = 19$) report multiple thresholds, including 25% ($n = 9$). There is more consistency in the threshold typically applied with the normative food spending method ($n = 24$): most report a catastrophic threshold of 40% ($n = 20$); some also use additional thresholds ($n = 11$).

Methods used to measure impoverishing out-of-pocket payments

Twenty-seven publications include analysis of impoverishing out-of-pocket payments, with significant variation in the type of poverty line applied. Six studies do not report the basis for the poverty line used. The poverty lines used in the remaining publications are listed in Appendix 3 (Table A3). With two exceptions [16,17], multi-country publications use an absolute poverty line only. No publication focusing exclusively on one or more high-income countries uses an absolute international poverty line.

Depth of analysis

Table 2 summarises the extent to which publications go beyond reporting on the incidence of catastrophic or impoverishing out-of-pocket payments. Fewer than half of the publications reporting catastrophic out-of-pocket payments ($n = 23/53$) and just over half of the publications reporting impoverishing out-of-pocket payments ($n = 15/27$) analyse **trends over time**.

More than half ($n = 31/53$) of the publications reporting catastrophic out-of-pocket payments also include **equity analysis**, presenting the distribution of these payments across consumption or income quintiles through a concentration index or regression analysis. The concentration index measures the extent to which catastrophic health spending is concentrated among different income or consumption groups. Of these publications, most ($n = 23/31$) focus on a single country and draw on nationally representative data ($n = 20/31$). The remainder ($n = 8$) are multi-country publications, of which only 5 draw on nationally representative data and only 2 provide results disaggregated by country. Quintiles disaggregated by country are reported in single-country studies only. Roughly one-third ($n = 9$) of publications reporting impoverishing out-of-pocket payments analyses distribution across consumption or income groups via quintile breakdown or regression analysis. Only two publications count the number of households who are further impoverished as a result of out-of-pocket payments [16,18].

Table 2
Depth of analysis by publications and by country, 1990 to mid-2017.

Depth of analysis across publications (n = 41)	Catastrophic	Impoverishing
Nationally representative publications		
Trend in the incidence over time within a publication	21	14
Equity analysis: distribution across consumption or income quintiles	25	9
Breakdown by type of health service	7	0
Sub-group publications		
Trend in the incidence over time within a publication	2	1
Equity analysis: distribution across consumption or income quintiles	6	0
Breakdown by type of health service	0	0
Nationally representative results	44 countries	19 countries
Time trend using the same method, threshold and data source	20 countries: AL, AM, BE, BG, CZ, DK, EE, FR, GE, HU, IS, KG, LV, MD, NO, PL, PT, RS, TJ, TR	7 countries: AL, EE, FR, LV, PT, TJ, TR
Time trend using the same method and threshold but different data sources	5 countries: BA, DE, RU, HR, UA	0 countries
Data at one point in time only	14 countries: AT, AZ, BY, FI, GR, IE, LT, LU, ME, RO, SK, ES, SE	10 countries: BG, HR, CZ, GE, IT, KZ, KG, ME, RU, UA
Multiple data points but incomparable methods or thresholds	5 countries: IL, IT, KZ, SI, CH	2 countries: BA, RS
Data from 2012 or later	0 countries	0 countries
Data from 2010 or later	13 countries: DK, EE, FR, GE, IL, KG, PL, PT, MD, RU, SI, TJ, TR	4 countries: EE, PT, TJ, TR
Equity analysis	15 countries: AL, DK, EE, FR, GE, DE, LV, KG, MD, PL, PT, RU, RS, TJ, TR	2 countries: TR, EE
Breakdown by type of health service	6 countries: CZ, EE, FR, PT, RS, TR	0 countries
Subgroup results		
People aged 50 and over	17 countries: AT, BE, CZ, DK, FR, DE, GR, HU, IT, PL, PT, NL, ES, SI, RU, SE, CH	0 countries
Other	13 countries: AM, BA, HR, CZ, EE, GR, KG, KZ, LV, PL, RU, TR, UA	1 country: PL

Very few publications analyse the **drivers of financial hardship**. Twenty-two studies provide some information on the breakdown of out-of-pocket payments by health service. However, only a handful (n = 7) specifically break down catastrophic out-of-pocket payments in this manner, all of them single-country studies. No publications explicitly analyse the breakdown of impoverishing out-of-pocket payments.

In total, only 4 of the 54 documents included in this review report analysis of time trends, equity analysis and breakdown by health service for catastrophic out-of-pocket payments [19–22]. All of these publications are single-country studies with a focus on Estonia, France and Portugal. Three of the four are published by WHO.

The extent of **country-level discussion** across publications varies significantly. Single-country publications tend to have more in-depth discussion of results, attempting to link results to policies and to provide recommendations accordingly. Although 11 out of 20 multi-country studies include some country-level discussion of results, the depth of discussion varies and is usually very limited.

One publication [23] attempts to adjust for the possibility of **unmet need for health care**. Its authors define a binary indicator based on whether or not the household has reported out-of-pocket payments for medicines as a proxy for access to health care in Turkey.

3.3. Analysis of financial protection results

This section focuses on catastrophic out-of-pocket payments due to the very small number of countries for which recent data on impoverishing out-of-pocket payments are available. Appendix 3 contains an analysis of impoverishing out-of-pocket payments.

Country coverage

Results extracted from the literature provide estimates of catastrophic out-of-pocket payments for 44 countries and estimates of impoverishing out-of-pocket payments for 19 countries (Table 2). However, results based on relatively recent data (2010 or later) are only available for 13 countries (n = 13 for catastrophic, n = 4 for impoverishing) and there are no results after 2011. Analysis that goes beyond reporting incidence is limited to a handful of countries (see below).

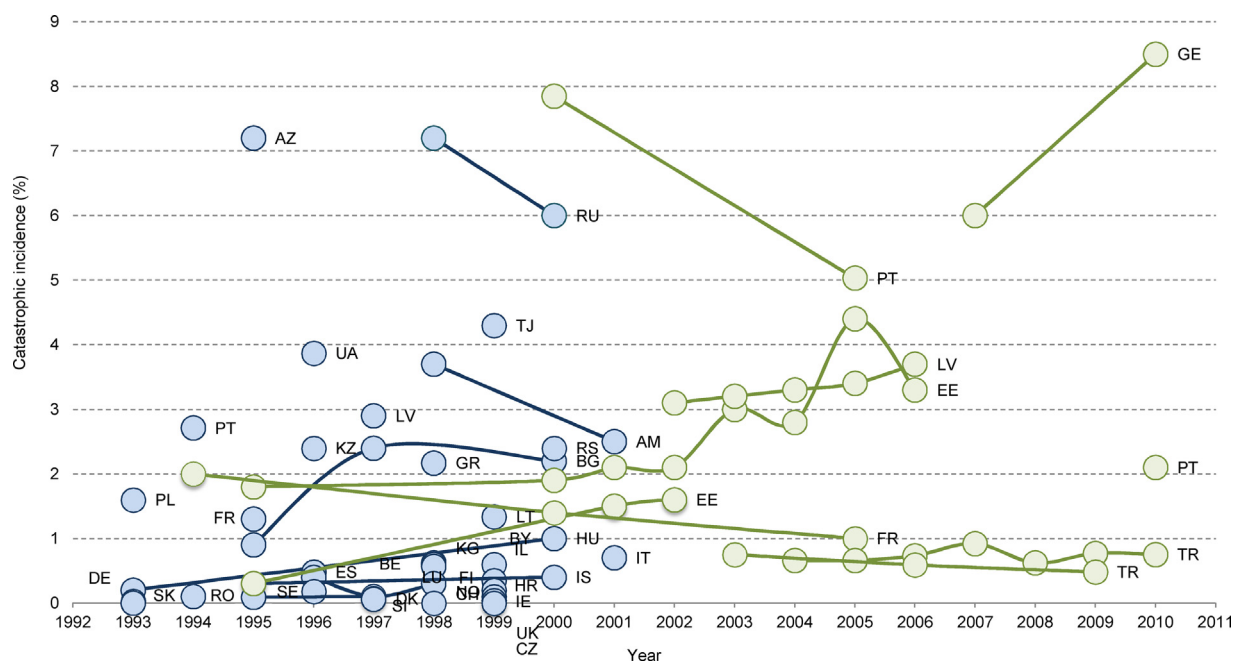
Comparability of results across countries

Although nationally representative results for catastrophic out-of-pocket payments are available for many countries, often they are not based on the same methods, denominators, thresholds, years or types of data source (Table 3). This limits the potential for international comparison. International comparison of relatively recent data (2005 onwards) using nationally representative data with the same denominator and threshold is only possible for a handful of countries: 6 using the normative food spending method (Estonia, France, Georgia, Latvia, Portugal and Turkey; see Fig. 2) and 5 using

Table 3

Financial protection results by method and over time, 1990 to mid-2017.

Number of countries with:	1990–1994	1995–1999	2000–2004	2005–2009	2010–2014	2015–
Nationally representative analysis						
Catastrophic OOPs (with a denominator of consumption, expenditure or consumption expenditure)						
NFS 40%	7	32	12	6	3	0
BS 10%	0	0	11	4	2	0
BS 25%	0	0	11	2	0	0
AFS 40%	0	0	10	2	1	0
AFS 25%	0	0	8	1	0	0
Impoverishing OOPs						
Absolute international poverty line (\$2)	0	0	7	0	0	0
Absolute international poverty line (\$2.15)	0	0	5	2	0	0
Absolute national poverty line	0	0	0	9	1	0
SHARE analysis (people aged 50+)						
Catastrophic OOPs						
BS 30%	0	0	0	11	11	0
Impoverishing OOPs						
Absolute international poverty line	0	0	0	0	0	0
Absolute national poverty line	0	0	0	0	0	0

**Fig. 2.** Catastrophic incidence using the normative food spending method (40% threshold), 1990 to mid-2017, 39 countries.

Notes: Results from Xu et al. studies in blue; results from other studies in green. All estimates are based on nationally representative data with a denominator of consumption or expenditure. When multiple estimates for the same year were presented across the two studies, only one was plotted (whichever was rounded to hundredths rather than tenths). Data for different years from the two studies were connected in the same series, as identical data sources, methods and denominators were used.

Sources: Xu et al., [7,24]; other data extracted from the literature review (see Appendix for details).

the budget share method (Albania, Bulgaria, Russian Federation, Serbia and Turkey; see Fig. 3).

The incidence of catastrophic out-of-pocket payments

Fig. 2 presents results using the **normative food spending method** with consumption as the denominator and a 40% threshold. Although Xu et al. [7] and Xu et al. [24] cover many countries ($n = 39$), the data they use do not go beyond 2002 and for most countries estimates are only available for a single point in time. Using this method, the majority of countries are found to have an incidence of catastrophic out-of-pocket payments below 1%; of these

countries, almost three-quarters were of high-income status at the time of data collection. More recent comparable data are available for only six countries (see Fig. 2 and Appendix 3, Figure A2); among these countries, there is no clear distinction between results and country income level.

Results based on the **budget share method** (10% threshold) generally show a higher incidence than those based on the normative food method (40% threshold) (Fig. 3). All of the countries for which these data are available were of middle-income status at the time of data collection. Results for the budget share method (25% thresh-

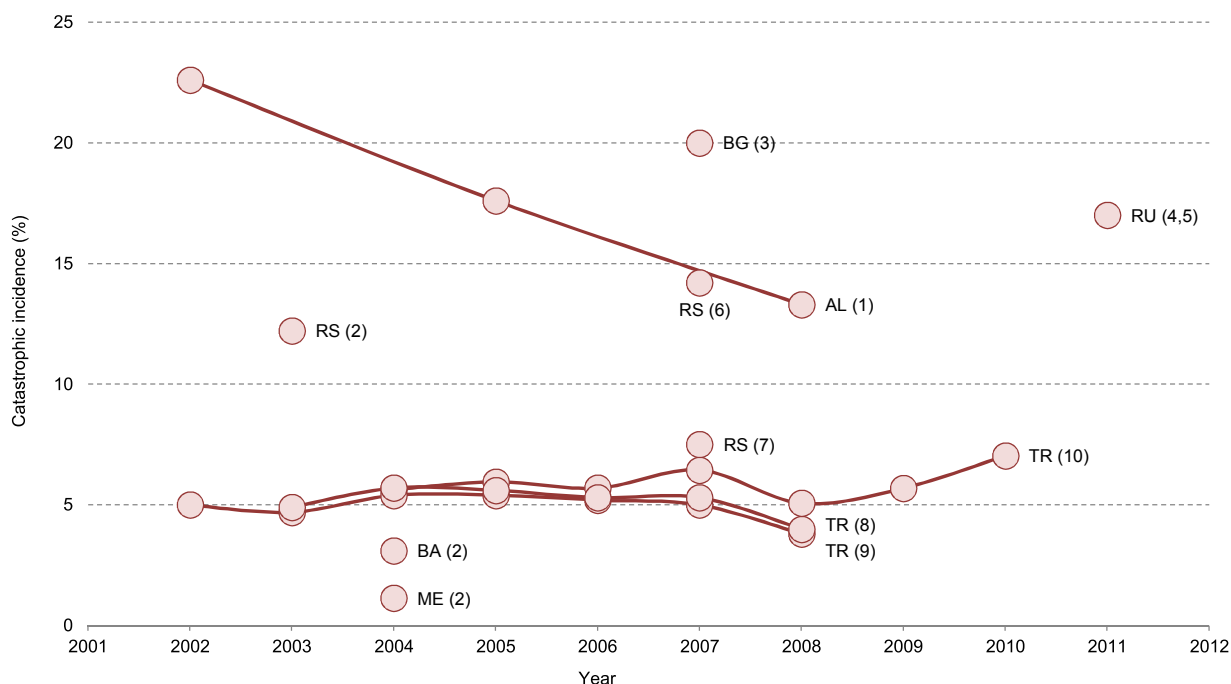


Fig. 3. Catastrophic incidence using the budget share method (10% threshold), 1990 to mid-2017, 7 countries.

Notes: All data are nationally representative. Each marker and line represents a different study.

Source: Data extracted from the literature review. (1) Tomini et al. 2013; (2) Bredenkamp et al. 2011; (3) Bernabé et al. 2017; (4) Baird 2016; (5) Baird 2016; (6) Arsenijevic et al. 2015; (7) Arsenijevic et al. 2013; (8) Brown et al. 2014; (9) Aran and Hentschel 2012; (10) Ozgen et al. 2015.

old) are available for 11 countries (all of middle-income status), but only 2 countries – Albania and Turkey – have multiple data points over time (see Appendix 3, Figure A3).

Given the limited availability of results applying different methods to the same country using the same data for the same years, it is difficult to determine from the literature on Europe whether a particular method (and threshold) consistently produces a higher or lower level of incidence than another.

The studies in this review do not show any clear relationship between results and denominator used (consumption vs income). Among the handful of countries where both denominators are used, the results are mixed – the incidence of catastrophic out-of-pocket payments is higher for income than consumption in Serbia and Turkey but lower in Albania.

Due to variation in the structure of different types of survey, results from the same country and year using the same method, denominator and threshold but using a different type of survey can vary substantially, with no clear trend by survey type.

Overall, as shown in Fig. 4, there is a weak trend suggesting that in countries in which out-of-pocket payments constitute a higher share of total spending on health, the incidence of catastrophic health spending is also higher. However, the trend is not statistically significant, perhaps due to the small number of observations available.

Trends over time

Broad trends over time are relatively similar across methods. In general, the literature does not show much change in the incidence of catastrophic out-of-pocket payments over time in EU15 countries. Substantial improvements in financial protection are mainly seen in Armenia, Portugal and the Russian Federation between the late 1990s and early 2000s and Albania in the 2000s, while countries that experience a worsening of financial protection include Bulgaria, Estonia and Hungary between the early 1990s and early 2000s, and Georgia between 2006 and 2010 (Fig. 2 and Fig. 3). Note, however, that time trend analysis is limited.

Equity analysis

Among the 15 countries for which income inequalities in catastrophic out-of-pocket payments are reported, the majority find them to be concentrated among poorer households. However, there are exceptions; rich households are found to have a higher incidence of catastrophic out-of-pocket payments than poor households in Denmark, France, Kyrgyzstan, the Republic of Moldova and Turkey; some studies found no significant difference across households.

Due to the paucity of results for Europe, it is not possible to establish – from the literature reviewed here – whether there is a relationship between method used to measure financial protection and the distribution of financial hardship across consumption or income quintiles.

Breakdown by health service

A breakdown of catastrophic out-of-pocket payments by health service is only available for five countries. In three of them, medicines are clearly identified as the main driver of financial hardship: Czech Republic [25], Estonia [19] and Portugal [20]; in Serbia, the main driver is referred to as ‘bought and brought’ goods, which may include medicines [26]; and in France, the main driver is identified as ‘outpatient care’ [21].

4. Discussion

4.1. How feasible is it to monitor financial protection in Europe?

Our analysis finds that it is feasible to monitor financial protection in 52 of the 53 countries in the WHO European Region and to carry out a detailed analysis that goes beyond simply calculating the incidence of catastrophic or impoverishing out-of-pocket payments. Almost every country has nationally representative household budget survey (HBS) data collected within the last five years and available for more than one year, allowing analysis of trends over time. Many countries conduct a household budget sur-

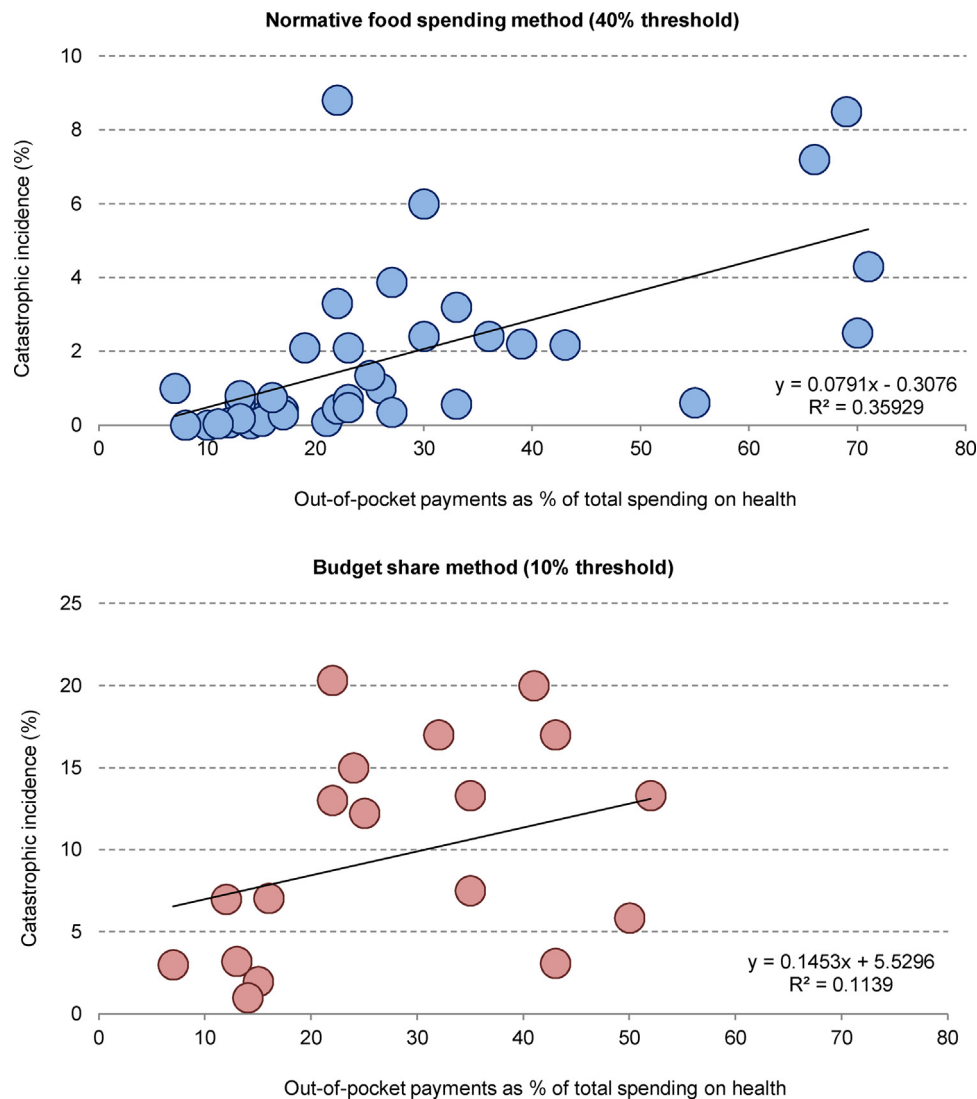


Fig. 4. Catastrophic incidence vs the out-of-pocket payment share of total spending on health.

Notes: Data on the out-of-pocket share provided for the same year as catastrophic incidence.

Source: Most recent estimates of catastrophic incidence by country extracted from the literature review (see appendix). Out-of-pocket payment data from the WHO Global Health Expenditure Database.

vey every year. Among those that do not, the maximum interval between surveys is five years.

HBS is the obvious choice for monitoring across countries: it is the only type of data that is widely and routinely available throughout Europe and, in contrast to SHARE, it is nationally representative and allows the use of capacity to pay methods. Nevertheless, comparative analysis requires caution due to variation in HBS structure and implementation across countries, even in the European Union [14].

4.2. What does the literature tell us about financial protection in Europe?

Financial protection varies across countries in Europe. EU countries and those in which out-of-pocket payments constitute a lower share of total spending on health tend to offer a higher degree of financial protection; note, however, that these results are not necessarily statistically significant given the small number of studies involved. Financial protection has not changed much over time; substantial changes have almost always taken place in countries towards the east of the region. It is not clear from the litera-

ture on Europe whether financial hardship is more likely to be found to be concentrated in poorer as opposed to richer households. Most of the (very few) studies that look at the breakdown of catastrophic out-of-pocket payments by health service find financial hardship to be driven by household spending on outpatient medicines.

These findings may not accurately reflect trends in financial protection across Europe due to major gaps in the literature's geographical scope and the scarcity of recent analysis. Most single-country studies focus on middle-income countries. Analysis is often based on older data; very few published studies draw on data beyond 2010 and no studies draw on data beyond 2011.

It is also difficult to compare results across countries due to variation in the methods used to measure financial protection, the denominator selected, the years studied and, to a lesser extent, the types of data used. Comparison of the incidence of catastrophic out-of-pocket payments using the same method and data source is only possible for 6 countries using data from 2005 to 2009 and for 3 countries using data from 2010 onwards. Comparison of the incidence of impoverishing out-of-pocket payments is even more difficult.

In-depth analysis is lacking in most studies. Many only report on catastrophic out-of-pocket payments, ignoring impoverishment; the majority do not go beyond reporting incidence; and only a handful provide the comprehensive, context-specific analysis needed to inform policy. As a result, the empirical literature provides little actionable evidence on financial protection in Europe.

4.3. What can be done to improve monitoring in future?

Based on the shortcomings of the literature we have reviewed, we suggest future efforts to monitor financial protection should systematically address gaps in geographical coverage; take a comprehensive approach, paying particular attention to the issue of equity; be grounded in context-specific analysis; and use consistent methods and data sources.

At present, the literature shows a bias towards middle-income countries. Although it seems intuitive to prioritise monitoring in countries with weak financial protection, attention should also focus on countries with strong financial protection, in order to identify good practice and highlight transferable lessons for policy.

If monitoring is to generate actionable evidence for policy, it needs to be comprehensive and context specific. This review has revealed the shallowness of much of the empirical literature on financial protection. Many studies only measure one dimension of financial protection, ignoring the issue of impoverishment. The majority do not measure more than the incidence of catastrophic out-of-pocket payments, ignoring distributional issues and underlying drivers. Equity analysis is particularly important for identifying the groups of people most likely to experience financial hardship, while breaking down catastrophic out-of-pocket payments by health service is a useful starting point for exploring the health system factors that lead to financial hardship. An examination of distribution, drivers and changes over time should be central to any analysis of financial protection.

The literature suggests that while large multi-country studies provide a snapshot across a region or globally, they are rarely able to offer more than a surface interpretation of results. To be useful, international comparison should be grounded in detailed, context-specific, single-country studies so that it is possible to link financial protection to national circumstances and policies. This linkage is important for three reasons. First, it is crucial for understanding the health system factors that influence financial protection. Second, it allows analysis to account for unmet need for health care – the possibility that some people are not exposed to out-of-pocket payments, and cannot be counted as experiencing financial hardship, because they face financial or other barriers to access. Third, it enables analysis of factors outside the health system – for example, social welfare policies – that affect households' capacity to pay for health care.

Monitoring should adopt consistent methods and data sources (and carefully record these details in publications) to facilitate and enhance comparability across countries. The choice of method used to measure financial protection has particular implications for the analysis of equity within and across countries.

For impoverishing out-of-pocket payments, absolute international poverty lines are too low to be useful in Europe, even among middle-income countries, a finding acknowledged in a new global analysis of financial protection published by WHO and the World Bank in December 2017 [27]. The European literature we have reviewed rightly makes greater use of national poverty lines or poverty lines constructed to reflect national patterns of consumption, as in studies based on the normative food spending method. National poverty lines vary across countries, making international comparison difficult; in contrast, constructed poverty lines facilitate international comparison [17].

For catastrophic out-of-pocket payments, global studies suggest that the budget share method (at the 10% and 25% thresholds) generally finds financial hardship to be concentrated among richer rather than poorer households [16,27], which raises questions about its usefulness for policy purposes. Capacity to pay approaches attempt to address this limitation [28,29]. As we have noted, it is not possible to establish, from the literature on Europe, whether different methods are consistently associated with different patterns of distribution across consumption or income quintiles. However, global analysis indicates that capacity to pay approaches are less likely than the budget share approach to find that financial hardship is concentrated among richer rather than poorer households [27]. This suggests capacity to pay approaches are more relevant for policy than the budget share approach, especially where equity is concerned.

With regard to choice of data source, the advantages of household budget surveys clearly outweigh their limitations, although we acknowledge that much could be done to increase quality and standardisation across countries. Because data on household income are limited in terms of availability and reliability, monitoring of catastrophic out-of-pocket payments may be better served when consumption is the denominator.

Finally, given the widespread availability of nationally representative data, it is of limited value to focus on subgroups in the population – that is, people with a specific disease or people using a specific type or level of health service. Studies that focus exclusively on subgroups are unlikely to provide useful information for policy in comparison to studies of the general population, partly due to the small numbers involved and partly because policy options for improving financial protection derived from analysing subgroups will not differ from policy options derived from analysing the general population.

4.4. Limitations of this review

The searches we carried out may not have identified all national grey literature and we only included publications written in English. Because of this, we may not have captured national studies that are not publicly available through international platforms.

5. Conclusions

In this article we have shown that it is feasible to monitor financial protection in almost every country in Europe. The necessary data are available on a regular basis – annually in many countries. We have also systematically reviewed and analysed the empirical literature and find that although the number of publications has grown in recent years, there are major gaps in terms of geographical coverage, recent analysis and depth of analysis. The literature is therefore unable to provide the evidence needed to monitor progress towards universal health coverage in Europe. Where analysis is available, it is often difficult to compare results across countries due to substantial variation in the methods used to measure financial protection, the years studied and, to a lesser extent, sources of data.

Future efforts to monitor financial protection should systematically address gaps in geographical scope and include countries with strong financial protection in order to identify good practice and highlight transferable lessons for policy. Monitoring should be based on consistent methods and data sources to facilitate comparison over time and across countries. It should also take a comprehensive approach that is grounded in context-specific analysis, so that it is possible to link changes in financial protection to changes in national circumstances and policies.

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Appendix: Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.healthpol.2018.02.006>.

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