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What influences the impact of health financing reforms? Using qualitative comparative analysis to identify patterns in health financing systems and their effects on financial protection

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ABSTRACT

Background: Policy interventions to improve financial protection do not always work as expected and their impact can vary across settings, suggesting that underlying health financing attributes (i.e. system arrangements for revenue raising, pooling and purchasing) matter. The objective of this study is to systematically identify patterns of health financing system attributes which influence the impact of policy interventions on financial protection.

Methods: We conducted a systematic literature review to identify studies evaluating the impact of health financing interventions on financial protection. We searched across five databases from their earliest record to October 2023 and applied no geographic restrictions. Data were extracted on the measured outcome of catastrophic health expenditures and on underlying attributes of the health financing system. Patterns in the relationship between system attributes and financial protection were identified using qualitative comparative analysis (QCA). QCA compares and contrasts different combinations and assesses through formal statistical tests the degree to which combinations are present (or absent) when the intervention has been successful (or not) in obtaining the outcome of interest. Results from QCA tests were illustrated by selected studies.

Findings: We identified 128 studies in our literature review from which a rich dataset was formed, representing diverse health financing systems and country reform experiences. The QCA approach to synthesize the literature provided unique insights regarding the pathway from policy intervention to impact on financial protection. We found empirical support for the significance of system attributes influencing intervention impact on financial protection. Findings indicated that combinations of more than one attribute were needed for positive impact on catastrophic health expenditures whereas only an individual attribute was needed to avoid negative impact. Attributes can have a direct or indirect effect on impact and can be synergistic, opposing or mitigating in relation to improving financial protection.

Conclusion: This is the first application of QCA to health financing data. The pathway between impact on financial protection and a health financing intervention is complex and mediated by combinations of explanatory factors. Further research is needed for more comprehensive analyses across all health financing functions. Taking into account the underlying attributes of the health financing system and their interactions is critical to ensuring effective policies and progress on financial protection.

1. Introduction

The nature of the health financing system matters when implementing policy interventions. Policies do not always have expected effects and their impact can vary across settings, suggesting that underlying attributes of the health financing system, by which we mean the arrangements for revenue raising, pooling and purchasing, can influence the impact of policy interventions on goals such as financial protection. With the adoption of the Sustainable Development Goals by the United Nations, financial protection, as part of universal health coverage (UHC), is officially recognized as a health system goal for countries around the world (United Nations, 2017). Since then, there has

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been a growing demand for evidence regarding the effectiveness of health financing policies in providing financial protection. Financial protection is also influenced by the broader socio-economic, macro--fiscal, and political context in a country, but we focus here on the health financing system as there is a need for better understanding of the role health systems play in achieving policy impact (Kutzin, 2001). Moreover, underlying system attributes represent levers more likely to be under the control of policymakers.

The evidence base is full of studies assessing the impact of health financing policy interventions as well as studies focused on evaluating the implementation process of health financing reforms. A number of literature reviews have synthesized the effect of specific health financing policies (Acharya et al., 2012; Anselmi et al., 2015; De Walque and Kandpal, 2022; Ekman, 2004; Lagarde and Palmer, 2006; Lagarde and Palmer, 2009; Lagarde and Palmer, 2011). While these meta-analyses estimating the average effect of health financing interventions and making generalisations are a valuable source of information, they are not well suited to handling high levels of heterogeneity. Studies that look across diverse contexts often do not examine the combined effects of contextual factors on outcomes, and instead attempt to isolate and control for these. Another body of evidence consists of realist evaluations which provide an in-depth analysis of the implementation context, outcomes and mechanisms of policy interventions (Dossou et al., 2020; Robert et al., 2017; Sanderson et al., 2018; Singh et al., 2021; Tan et al., 2019). Realist evaluations are useful as they examine how an intervention works and the conditions needed to improve its effectiveness (Pawson and Tilley, 1997). However, by nature, they tend to focus on a particular setting and thus do not easily allow for drawing conclusions across different settings. Narrative syntheses (Das and Do, 2023) across implementation settings are helpful in identifying common causes of variation, but the strength of association with such explanatory factors is not assessed, not least because such studies do not formally analyse patterns.

The value in formally assessing patterns is to enable consistently repeated intersections of explanatory factors with positive impact to be identified. Qualitative comparative analysis (QCA) is a technique of pattern recognition developed by Ragin, 1997; Ragin, 1998. It has numerous applications in the social sciences, including in health (Blackman et al., 2011; Thomas et al., 2014; Warren et al., 2013). QCA systematically compares and contrasts different combinations of explanatory factors and assesses the degree to which they are present (or not) when the intervention has been successful (or not) in obtaining the impact of interest. The focus of the approach is thus on identifying specific patterns or combinations of attributes. QCA then formally tests these for statistical significance to draw robust conclusions across multiple observations.

The objective of this study is to systematically identify patterns and assess the relationship between the impact of a health financing policy intervention on financial protection and underlying health financing system attributes. Our study uses QCA and draws on health financing frameworks proposed by WHO which identifies health financing system attributes as desirable because economic theory, normative thinking or country experience suggest that their presence fosters progress towards UHC (Jowett et al., 2020). Fig. 1 illustrates a pathway between a health financing intervention and its impact where the impact of the intervention is mediated by a set of attributes grouped by the main functions of a health financing system. For example, the impact of a new insurance scheme on financial protection will be lower than expected when implemented in a health financing system where provider payment incentives fail to manage overprovision, even when co-payments have been designed to be low.

Although the evidence base contains many studies that assess impact and implementation of health financing policies, there is a lack of studies that do both simultaneously and systematically. We thus conduct a literature review to gather available evidence of the impact of health financing interventions and extract data on possible configurations of health financing system attributes associated with improvements in financial protection. We then apply QCA methods to analyse and synthesize the data by examining patterns in combinations of these attributes as explanatory factors and financial protection against catastrophic health expenditures as the outcome of interest. We synthesize patterns in the data through QCA statistical tests and illustrate

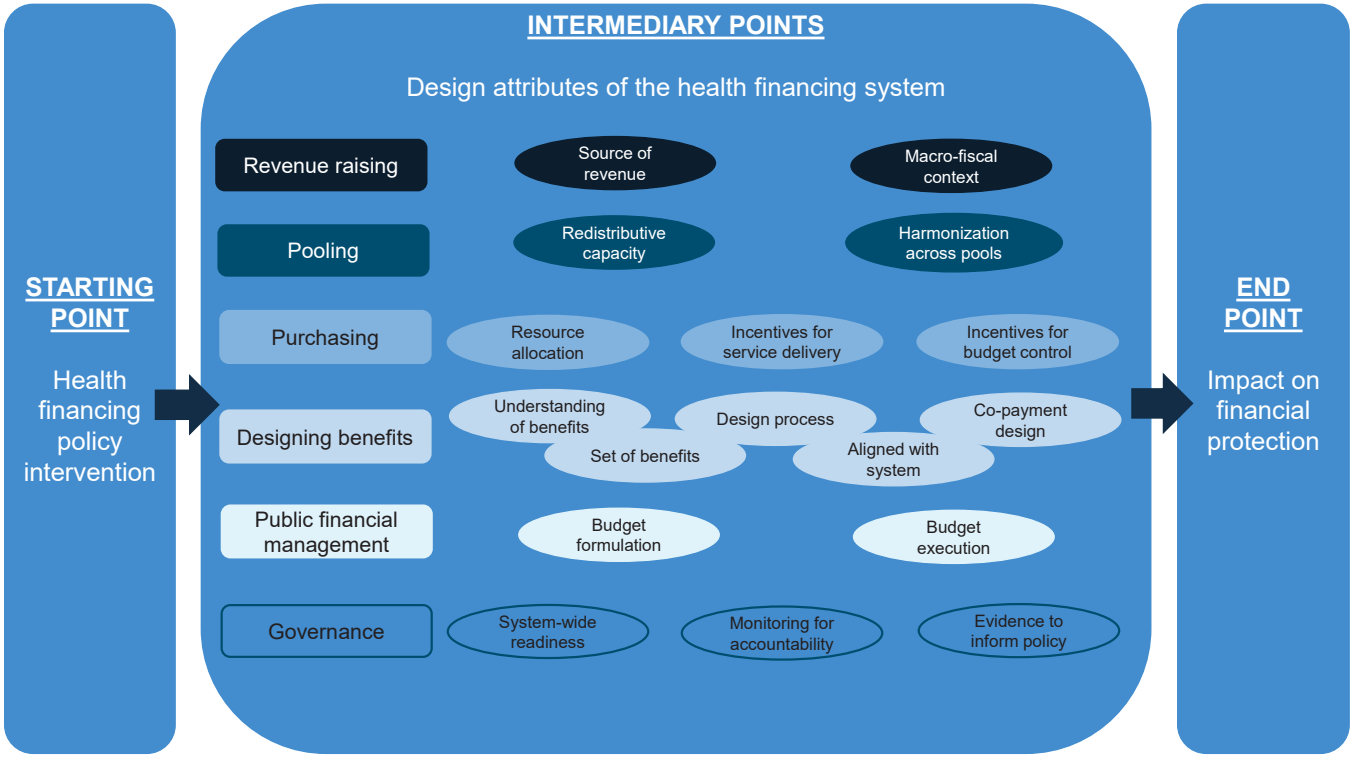


Fig. 1. Impact pathway.

findings by highlighting relevant studies from the literature.

2. Methods

2.1. Literature search

We followed Cochrane methods for conducting a systematic literature review (Noyes et al., 2011). We aimed to identify studies that evaluated the impact of health financing interventions on financial protection. We defined a health financing intervention as a deliberate and purposeful policy directed at changing one or more elements of the health financing system. We performed searches across five databases (EconLit, Global Health, PubMed, SCOPUS, and Web of Science) covering a range of disciplines, peer-reviewed and grey literature, and across all geographic regions. We identified relevant literature by searching for key terms found in the full text related to three concepts: financial protection, health financing and evaluations. Studies of financial protection were identified by searching for terms related to its direct measure of catastrophic health expenditures, an official Sustainable Development Goal indicator (United Nations, 2017). Relevant health financing literature was identified by terms for each core health financing function described in established frameworks (Kutzin, 2001). Evaluation studies were identified by terms covering a range of analytical approaches. The following search string was employed and adapted to specific databases as needed: (catastroph* AND (health OR medical) AND (expenditure* OR payment* OR spending OR expense* OR fee* OR (out AND of AND pocket) OR out-of-pocket OR oop)) AND (health AND (financ* OR revenue* OR pool* OR purchas* OR (pfm OR (public AND financ* AND management)))) AND (monitor* OR evaluat* OR measur* OR assess* OR analys*). All databases were searched for English language publications from their earliest record (ranging from 1900 to 1973) to October 2023.

Studies were screened against inclusion/exclusion criteria related to study type, focus and design:

- Study type: Empirical studies were included. Editorials, commentaries, literature reviews and methodological studies (unless including an empirical application) were excluded.
- Study focus:
  - o Studies evaluating the impact of a health financing intervention (whether targeting sub-population groups, e.g. civil servants, rural populations, or a large share of the population, e.g. national-level schemes) were included. This could involve the introduction of a new arrangement (e.g. an insurance scheme for the poor) or modifications to existing arrangements (e.g. removal of user fees). Studies analysing interventions whose primary aim was to strengthen another health system dimension (e.g. health workforce) were excluded. When a study addressed more than one system dimension, if one concerned health financing, the study was included.
  - o Studies evaluating intervention impact on catastrophic health expenditures (measured following either the budget share or capacity-to-pay approach, using any threshold) were included. Studies were excluded that did not compute or report on a conventional measure of catastrophic health expenditures.
- Study design: Studies evaluating impact, whether following an experimental, quasi-experimental or non-experimental design, were included. Studies evaluating an intervention without a comparator time period or group were excluded.

Screening was based on a review of the study title and abstract. Where the abstract did not provide sufficient information, a full text review was undertaken. A second researcher independently screened a random selection of 10% of studies to determine inter-rater reliability (Cohen, 1960). Cohen's kappa coefficient was estimated at 0.83, a level of agreement classified as "almost perfect" (Landis and Koch, 1977). A second rater was thus deemed empirically unnecessary, and screening of the literature continued by the principal researcher.

Quality appraisals of screened studies were not performed as the objective was not to estimate the impact of interventions but to identify patterns of system attributes coinciding with impact. Furthermore, there is ongoing debate regarding the need for quality appraisal, particularly in qualitative systematic reviews (Noyes et al., 2011).

Fig. 2 shows the review process following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009).

2.2. Data extraction

The full text of each screened study was reviewed to collect two categories of evidence:

- Financial protection [Y, impact]: results regarding intervention impact on catastrophic health expenditures (e.g. incidence rates increasing [decreasing] over time at national level, or higher [lower] in one group compared with another) (e.g. uninsured vs. insured).
- System attributes [X, combination of explanatory factors]: attributes of the health financing system (e.g. if participation in insurance schemes was voluntary or mandatory; if payment for hospital services was based on fee-for-service, etc.). These were drawn from observations made by authors, often in the introduction and/or discussion section(s). Data extraction began in 2017 and was initially done inductively to allow for themes to emerge from the literature. Attributes were organized into thematic groups, forming the basis of an initial coding framework. During the process of initial coding, WHO proposed a set of desirable health financing system attributes in a 2020 publication. Subsequently, data were triangulated against the list of attributes proposed by WHO (Jowett et al., 2020). This iterative approach follows recommendations for QCA by Ragin (2014) and Thomas et al. (2014) that the process of identifying explanatory factors should entail some 'dialogue' involving a

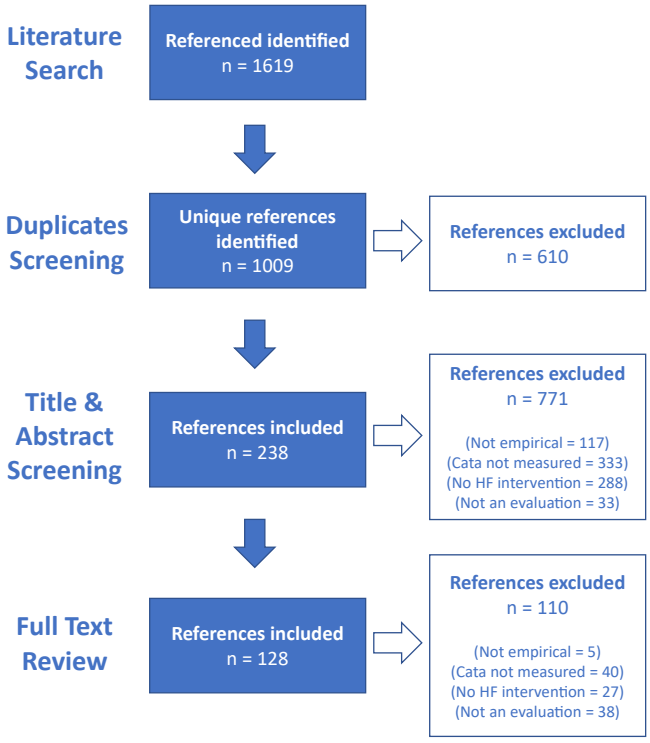


Fig. 2. PRISMA flow diagram.

reflection on conceptual underpinnings by drawing from other literature, economic theory, and/or key informants. This mainly consisted of minor changes to attribute labels (e.g. from 'coherence across pools' to 'harmonization across pools'), grouping conceptually similar attributes (e.g. combining predictability and stability of resources with conducive macroeconomic context), or disaggregating attributes into two or more specific themes (e.g. benefit design based on evidence and benefit design aligned with the system to support its provision). The triangulation process further highlighted the importance of attributes related to public financial management (PFM), which had not emerged from the initial process of inductive coding and thus were extracted deductively. This triangulation process resulted in a final set of attributes common to the two sources.

Data extraction was performed by the first author and organized into themes using Nvivo 14 software.

2.3. Data coding

In QCA, explanatory factors [X, combination of system attributes] and the impact [Y, catastrophic health expenditures] are given a membership value. Membership can be coded in either a 'crisp' or 'fuzzy' manner (Ragin, 2014). In a crisp approach, values are coded as 1 or 0, reflecting an attribute as fully present or absent or impact as fully achieved or not. In a fuzzy approach, values range between 1 and 0, allowing for gradations of presence. Our data was coded following the fuzzy approach:

- Catastrophic health expenditures [Y]: Coded as 1 if positive and significant i.e. results showed a decrease in incidence over time or were lower in the treatment group (e.g. those covered by insurance); 0.75 if positive but not statistically significant; 0.25 if negative but not significant and 0 if negative and statistically significant.
- Financing system attributes [X]: Coded between 1 and 0 to reflect the degree of presence based on reported observations of study authors (e.g. reliance on public sources of revenue coded at 0.75 if public spending as a percentage of total health expenditure was less than 50% but the study reported increases in public funding to support reforms). If the study observed change over time, codes reflected system attributes post-intervention; otherwise codes reflected the starting point. If the study evaluated differences between two comparators, codes reflected the treatment group.

If data on a particular attribute was not reported in the study, we followed approaches used in the QCA literature for handling missing data by imputing half of missing observations to a value of 0.49 and half to 0.51 (De Block and Vis, 2019). This reflects partial presence/absence to the closest degree of neutrality, such that presence/absence cancel out.

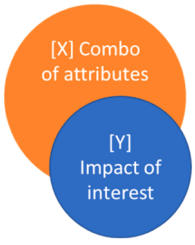
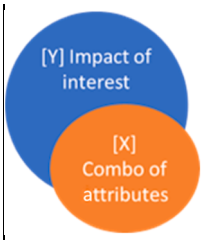
In QCA notation, presence of attributes is denoted with capital letters while absence is indicated with lower case letters. For example, aBC means attributes B and C are present whereas attribute A is absent. An attribute is deemed to be present if its membership value is greater than 0.5.

2.4. Data analysis

Data were analysed by QCA, which employs Boolean logic to identify attributes that are necessary and sufficient for the impact to be observed (Thomas et al., 2014). In a simplified example: attributes A, B and C were observed in a study where incidence of catastrophic health expenditures decreased over time; in another study with similarly positive impact, only B and C were present and A was absent; based on logical deduction, it can be concluded that (i) B and C are necessary but not sufficient on their own as both must be present and (ii) A is not necessary to obtain the impact of interest. Such conclusions would be formally determined across several observations and based on statistical tests (Table 1).

We first assessed the extent to which X is necessary for Y, reflecting the logical assertion 'if X, then Y' (Ragin, 2014; Thomas et al., 2014). This relationship is illustrated by the impact of interest [Y] as a subset of a combination of attributes [X] (Table 1, left figure). In other words, studies with the given outcome measure of catastrophic health expenditures are a subgroup of studies with that combination of health financing system attributes. The relationship is estimated through a consistency score (Ragin, 2014). The numerator is represented by the area of intersection and calculated as the summed membership value of

Table 1
QCA measures.

	Consistency score		Coverage score
Figure			
Logical relationship	Necessity: If X, then Y		Sufficiency: X being true always implies Y is true But X not being true does not always imply that Y is not true
Formula	Y [impact of interest] $N_{XY} = \Sigma\min(x_i, y_i)/\Sigma x_i$ where X signifies the combination of attributes, Y signifies the impact, x_i signifies each observation's membership value for X, and y_i stands for each observation's membership in Y	~Y [negation of impact] $N_{X\sim Y} = \Sigma\min$ $(x_i, 1\text{-}y_i)/\ \Sigma x_i$	$S_{XY} = \Sigma\min(x_i, y_i)/\Sigma y_i$ numerator is the summed membership of studies with that configuration and impact of interest; denominator is the summed membership of studies with impact of interest
Statistical test	$N_{XY} > .75$	$N_{XY} > N_{X\sim Y}$	

studies reporting the combination of attributes and the impact of interest using the minimum operator, i.e. minimum value of the two, such that XY = min (X,Y) where, if X is valued at 1 and Y is valued at 0.75, the membership value is 0.75. The denominator is represented by the orange area and estimated as the summed membership value for that combination (studies with that combination), regardless of impact. The closer the consistency score is to 1, the greater the degree to which attributes are present when positive impact is observed (e.g. a score of 0.93 indicates 93% of studies with that combination of attributes also reported progress on financial protection).

Consistency scores were also estimated for negative cases (e.g. financial protection worsening over time), referred to in QCA literature as the negation of impact [not-Y or ~Y]. Consistency scores of ~Y assess the extent to which a combination of attributes [X] is also present when an intervention resulted in negative impact. This helps to ensure logic by minimizing contradictions between 'if X, then Y' and 'if X then ~Y', or where a combination of attributes coincides with positive impact but also coincides with negative impact. Logic is ensured when consistency scores for Y are high and consistency scores for ~Y are low.

Consistency scores were then evaluated for statistical significance. We first tested whether Y consistency scores were greater than 0.75, a set value recommended by Ragin (2017). We then tested whether the Y consistency score was greater than the ~Y consistency score. Both tests were conducted at the 0.05 significance level. Combinations that tested significantly were then reduced to their logical elements using Boolean logic (Longest and Vaisey, 2008), e.g. ABC and aBC would reduce to BC reflecting that attribute A is irrelevant. We also identified combinations of attributes which passed both tests. These final combinations were also reduced to their logical elements using Boolean logic and then consistency scores were calculated.

For the final combination, we also calculated coverage scores, a second measure used in QCA which assesses the extent to which X is sufficient for Y. Sufficiency reflects the logical assertion 'X being true always implies Y is true, but X not being true does not always imply that Y is not true' (Ragin, 2014; Thomas et al., 2014). In other words, a combination of attributes coincides with positive impact on financial protection but positive impact on financial protection can also be observed through other combinations. The relationship is illustrated by attributes observed as a subset of the impact of interest (Table 1, right figure) and is estimated through a coverage score. The numerator is represented by the area of intersection and is the summed membership of studies with that combination and positive impact, and the denominator is represented by the blue area and is the summed membership of studies with positive impact (blue). Coverage scores measure the proportion of studies with the impact of interest that also have that combination of attributes. Thus, a coverage score of 0.85 means that 85% of all studies with the impact of interest were represented by that combination of attributes.

Consistency and coverage scores reflect the degree to which combinations of attributes coincide or are observed alongside impact on financial protection. The combinations of attributes identified from QCA tests can validate their importance for health financing objectives, although further determination of correlation or causality would require testing using different methods.

We conducted QCA using all studies identified from the literature review in order to maintain statistical power. Tests were performed by health financing function (i.e. attributes related to revenue raising were analysed separately from attributes related to pooling). Doing so avoids the problem of 'limited diversity,' which arises when the number of possible combinations exceeds the number of studies in the analysis (i.e. there are a total of 2^n possible combinations of attributes for n attributes) such that the analysis becomes a description of each individual study rather than a synthesis across studies (Thomas et al., 2014).

To assess the robustness of our findings to imputing for missing data (where data for a particular attribute are not reported), we performed a sensitivity analysis following the case deletion approach (Ragin, 2014). We replicated the analysis using the subset of studies which had a full set of data for all attributes under study. To ensure sensitivity analyses had sufficient explanatory power, we adhered to findings from methodological studies that QCA requires a minimum sample size of 12, adhering to a ratio of 3 studies for every 1 condition (Fainshmidt et al., 2020; Marx, 2006).

QCA was conducted in Stata 18 using the command developed by Longest and Vaisey (2008).

Results from QCA tests were illustrated by drawing reference to select studies that demonstrated specific combinations of attributes.

3. Results

Our systematic literature review identified 128 studies meeting inclusion criteria. Literature covered the period 2002–2023, representing 37 countries across all income groups (6 low-income, 15 lower-middle-income, 11 upper-middle-income, 5 high-income). Initial inductive coding identified 16 health financing system attributes reported alongside impact on catastrophic health expenditures. Triangulation of these attributes against the 19 attributes proposed by WHO (Jowett et al., 2020) resulted in a final set of 17 attributes of the health financing system analysed in this study (Table 2). The results of this triangulation and subsequent QCA tests are presented by health financing function.

3.1. Revenue raising

System attributes related to revenue raising that were reported alongside impact on financial protection were shown above in Table 2. Attributes reflect two themes: public source of revenues (S) (e.g. predominant reliance on public expenditure, public funding increasing over time) and conducive macro-fiscal context (M) (e.g. economic growth, strong fiscal capacity, sustainable financing).

QCA test results for all possible combinations of revenue raising attributes are shown in Table 3. The table shows estimates of consistency scores for the impact of interest (positive impact on financial protection) against the recommended set value of 0.75. Only the consistency score for the combination SM was identified as significantly greater. The table also shows consistency scores against the negation of impact (negative impact on financial protection). Two combinations, Sm and SM, were statistically significant. Only one combination, SM, therefore passed both tests, i.e. consistency scores significantly greater than 0.75 and greater than the negation of impact. The bottom of the table shows scores for this final combination. An overall consistency score of 0.861 indicates a high frequency of studies with this combination were observed together with progress on financial protection. A coverage score of 0.410 indicates that across all studies with the positive impact on financial protection, approximately 41% were represented by this combination of attributes.

Results suggest the combined presence of a strong reliance on public funds and a conducive macro-fiscal context are necessary health financing system attributes for improved financial protection. Results also reveal that to avoid negative impact on financial protection, a greater reliance on public funds is relatively more important than a conducive macro-fiscal environment as the two combinations of Sm and SM would logically reduce to S since positive impact is observed as long as S is reported, regardless of M. Results of sensitivity analysis on studies with no missing data (n=32) validated these findings (Appendix 1).

Key studies supporting QCA results include Aryeetey et al. (2016) who employed probit regressions and instrumental variables to analyse the effects of insurance on financial protection in Ghana. While authors were not specifically testing revenue raising attributes, descriptions of the study context included reports that the National Health Insurance Scheme was predominantly publicly financed with 70% coming from tax revenues and that poverty rates declined, reflecting a conducive macroeconomic context, data which fed into our QCA analysis. Aryeetey et al. found that household incidence of catastrophic health

Table 2
Attributes of effective health financing systems.

Health financing function	Attributes identified from the literature	Attributes proposed by WHO	QCA label	Descriptions from the literature	Studies reporting presence/absence of attribute
Revenue raising	Source of revenue	Financing is predominantly public/ mandatory Fiscal measures create incentives for healthier behavior	S	General government health expenditures represent a majority of total health expenditures Public funding increasing over time Funding sources are mandatory Tobacco, alcohol or other health tax	(Abdi et al., 2020; Abu-Zaineh et al., 2013; Ahmadi et al., 2021; Alemayehu et al., 2023; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Arenliu Qosaj et al., 2018; Aryeetey et al., 2016; Barasa et al., 2018; Bowser and Mahal, 2011; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Devadasan et al., 2007; Ekman, 2007; Fan et al., 2012; Fernandes Antunes et al., 2018; Gakidou et al., 2006; Grigorakis et al., 2014; Guo et al., 2016; Gómez-Dantés et al., 2023; Hajizadeh et al., 2023; Homaie Rad et al., 2017; Hsu et al., 2021; Ilesanmi et al., 2014; Jithitikulchai et al., 2021; Jung and Lee, 2021; Kaiser et al., 2023; Kassa, 2023; Kazemi-Galougahi et al., 2019; Kheibari et al., 2019; Kim and Kwon, 2015; Kim and Kwon, 2023; Knaul et al., 2012; Kockaya et al., 2020; Kusi et al., 2015; Kwesiga et al., 2020; Kyriopoulos et al., 2021; Lee et al., 2022; Li et al., 2012; Li et al., 2023; Limwattananon et al., 2015; Lu et al., 2012; Masiye et al., 2016; Mekonen et al., 2018; Meng et al., 2012; Mohammadzadeh et al., 2023; Nguyen and Wang, 2013; Nguyen et al., 2011; Okunogbe et al., 2022; Patcharanarumol et al., 2009; Prakongsai et al., 2009; Quayyum et al., 2010; Quintal, 2019; Rent and Ghosh, 2015; Saksena et al., 2011; Salti et al., 2010; Selvaraj and Karan, 2012; Shahrawat and Rao, 2012; Shi et al., 2010; Song et al., 2020; Sun et al., 2009b; Ta et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Tirgil et al., 2019; Yardim et al., 2014; Zhang et al., 2019; Zoidze et al., 2013)
	Macro-fiscal context	Funding is predictable Funding is stable	M	Economic growth, fiscal space/capacity, reductions in poverty Stable sources of financial protection that transcend economic crises Long-term financial sustainability	(Abdi et al., 2020; Ahmadi et al., 2021; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Aryeetey et al., 2016; Barasa et al., 2018; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Ekman, 2007; Fernandes Antunes et al., 2018; Gómez-Dantés et al., 2023; Hsu et al., 2021; Kaiser et al., 2023; Kheibari et al., 2019; Knaul et al., 2012; Kyriopoulos et al., 2021; Limwattananon et al., 2015; Mohammadzadeh et al., 2023; Prakongsai et al., 2009; Quintal, 2019; Salti et al., 2010; Song et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2020; Yardim et al., 2014; Yazdi-Feyzabadi et al., 2019; Zhang et al., 2019; Zoidze et al., 2013)
Pooling	Extent of financial risk sharing	Redistributive capacity	R	Public funding used to extend coverage to vulnerable populations Merging or transfer of resources across funds Risk selection prohibited Larger membership base and greater diversity in pool compositions	(Abdi et al., 2020; Ahmadi et al., 2021; Arenliu Qosaj et al., 2018; Aryeetey et al., 2016; Bowser and Mahal, 2011; Chantzaras and Yfantopoulos, 2018; Fan et al., 2012; Guo et al., 2016; Homaie Rad et al., 2017; Jithitikulchai et al., 2021; Kassa, 2023; Knaul et al., 2012; Kusi et al., 2015; Kyriopoulos et al., 2021; Li et al., 2012; Limwattananon et al., 2015; Lu et al., 2012; Maceira and Reynoso, 2012; Mekonen et al., 2018; Okunogbe et al., 2022; Prakongsai et al., 2009; Quayyum et al., 2010; Rent and Ghosh, 2015; Saksena et al., 2011; Selvaraj and Karan, 2012; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2020; Wagstaff and Yu, 2005; Yardim et al., 2014; Zoidze et al., 2013)
	Extent of fragmentation	Harmonization across pools	H	Coherence of benefits across different schemes Increasing standardization in organizational structures and management systems Increasing complementarity in funding flows/payment mechanisms across schemes	(Albright et al., 2021; Alkenbrack and Lindelow, 2015; Amaya Lara and Ruiz Gómez, 2011; An and Kim, 2020; Atake, 2020; Barasa et al., 2018; Bousmah et al., 2022; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Doubova et al., 2015; Fiestas Navarrete et al., 2019; Glied et al., 2017; Grigorakis et al., 2014; Hsu et al., 2021; Jiang et al., 2012; Kim and Kwon, 2015; Knaul et al., 2012; Liu et al., 2017; Lu et al., 2012; Ma et al., 2016; Maceira and Reynoso, 2012; Mekonen et al., 2018; Nguyen et al., 2011; Pan et al., 2022; Prakongsai et al., 2009; Quayyum et al., 2010; Rent and Ghosh, 2015; Shi et al., 2010; Shi et al., 2022; Somkotra and Lagrada, 2008; Sun et al., 2009a; Sun et al., 2009b; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2020; Tirgil et al., 2019; Yardim et al., 2010; Yardim et al., 2014; Zhang et al., 2010; Zhou et al., 2016)
Purchasing	Resource allocation	Resource allocation reflects population health needs and/or provider performance	A	Allocation formula based on enrolled individuals, consideration of health needs, equity objectives and/or with elements to reward performance or results (versus reports of allocations driven by historical budgets)	(Abu-Zaineh et al., 2013; Barasa et al., 2018; Bowser and Mahal, 2011; Chantzaras and Yfantopoulos, 2018; Fan et al., 2012; Fink et al., 2013; Gakidou et al., 2006; Kaiser et al., 2023; Knaul et al., 2012; Kwesiga et al., 2020; Liu et al., 2021; Liu et al., 2022; Lu et al., 2012; Mohammadzadeh et al., 2023; Pan et al., 2022; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Taniguchi et al., 2021; Wang et al., 2020; Zhou et al., 2016)
	Mechanisms to manage how	Purchasing and provider payment	V	Providers are selected/ contracted if they meet	(Abu-Zaineh et al., 2013; Aggarwal, 2010; Alkenbrack and Lindelow, 2015; Aryeetey et al., 2016; Assani Arani et al., 2018; Atake, 2020;

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Table 2 (*continued*)

Health financing function	Attributes identified from the literature	Attributes proposed by WHO	QCA label	Descriptions from the literature	Studies reporting presence/absence of attribute
	services are provided	mechanisms support service delivery objectives		certain requirements (e.g. quality) Processes for accreditation, empanelment, certification or regulation of providers to ensure minimum standards	Barasa et al., 2018; Bowser and Mahal, 2011; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Ekman, 2007; Fan et al., 2012; Fernandes Antunes et al., 2018; Fink et al., 2013; Galárraga et al., 2010; Grigorakis et al., 2014; Guo et al., 2016; Hajizadeh et al., 2023; Hsu et al., 2021; Jithitikulchai et al., 2021; Kaiser et al., 2023; Karan et al., 2017; Kassa, 2023; Knaul et al., 2012; Kusi et al., 2015; Limwattananon et al., 2015; Liu et al., 2021; Lu et al., 2012; Ma et al., 2016; Maritim et al., 2023; Masiye et al., 2016; Mekonen et al., 2018; Meng et al., 2012; Mohammadzadeh et al., 2023; Nannini et al., 2021; Nguyen and Wang, 2013; Nguyen et al., 2011; Okunogbe et al., 2022; Patcharanarumol et al., 2009; Prakongsai et al., 2009; Prinja et al., 2012; Quayyum et al., 2010; Ranson, 2002; Rent and Ghosh, 2015; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Shahrawat and Rao, 2012; Somkotra and Lagrada, 2008; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Thein et al., 2021; Ujunwa et al., 2013; Wagstaff and Lindelow, 2008; Wagstaff and Yu, 2005; Xu et al., 2018; Yardim et al., 2010; Yardim et al., 2014; Yazdi-Feyzabadi et al., 2019; Zhou et al., 2016; Zoidze et al., 2013)
	Mechanisms to manage costs and volume of services provided	Purchasing and provider payment mechanisms ensure budgetary control	C	Bundled payments (e.g. capitation, case-based, diagnosis-related-groups) Prospective payments Close-ended budgets, global budgets Reference prices fixed in advance and comparable with international standards Purchasers' ability to negotiate competitive costs with providers Fee schedules address distortions in volume across services/settings Providers do not exploit payment systems in their interest	(Abdi et al., 2020; Abu-Zaineh et al., 2013; Aggarwal, 2010; Ahmadi et al., 2021; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Arenliu Qosaj et al., 2018; Bowser and Mahal, 2011; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Devadasan et al., 2007; Ekman, 2007; Fan et al., 2012; Fink et al., 2013; Grigorakis et al., 2014; Hsu et al., 2021; Ilesanmi et al., 2014; Kaiser et al., 2023; Karan et al., 2017; Kim and Kwon, 2023; Knaul et al., 2012; Kockaya et al., 2020; Kyriopoulos et al., 2021; Lee et al., 2022; Li et al., 2012; Limwattananon et al., 2015; Liu et al., 2016; Liu et al., 2021; Liu et al., 2022; Lu et al., 2012; Ma et al., 2016; Maceira and Reynoso, 2012; Meng et al., 2012; Nguyen et al., 2011; Prakongsai et al., 2009; Rent and Ghosh, 2015; Saksena et al., 2011; Sekabaraga et al., 2011; Shahrawat and Rao, 2012; Shi et al., 2010; Somkotra and Lagrada, 2008; Song et al., 2020; Sun and Lyu, 2020; Ta et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Thein et al., 2021; Wagstaff and Lindelow, 2008; Xiang et al., 2016; Xu et al., 2018; Yang, 2015; Yazdi-Feyzabadi et al., 2019; Zhang et al., 2010; Zhou et al., 2016; Zhou et al., 2022)
Benefit design	Population understanding of benefits	Understanding: Entitlements and obligations are communicated and clearly understood by the population	U	Extent to which population understands available benefits Household visits, publicity campaigns, or other communication platforms or activities Benefits defined (e.g. communicated in a list)	(Aggarwal, 2010; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Atake, 2020; Bousmah et al., 2022; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Doubova et al., 2015; Ekman, 2007; Fink et al., 2013; Gakidou et al., 2006; Galárraga et al., 2010; Grogger et al., 2015; Jithitikulchai et al., 2021; Kaiser et al., 2023; Karan et al., 2017; Kassa, 2023; Knaul et al., 2012; Liu et al., 2021; Liu et al., 2022; Lu et al., 2012; Maritim et al., 2023; Nannini et al., 2021; Patcharanarumol et al., 2009; Rent and Ghosh, 2015; Saksena et al., 2011; Sparrow et al., 2013; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Ujunwa et al., 2013; Wang et al., 2020; Xu et al., 2018; Yardim et al., 2010; Zoidze et al., 2013)
	Comprehensive range of covered benefits	Benefits: A set of priority health service benefits within a unified framework is implemented for the entire population	B	Comprehensive package covering common health conditions and essential services Covered services including both inpatient and outpatient Coverage for medicines, dentistry, optometry and/or chronic conditions Special catastrophic package for services or treatments associated with high costs or for rare and costly conditions	(Abu-Zaineh et al., 2013; Aggarwal, 2010; Ahmadi et al., 2021; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Aryeetey et al., 2016; Atake, 2020; Baicker et al., 2013; Barasa et al., 2018; Bousmah et al., 2022; Bredenkamp and Buisman, 2015; Choi et al., 2016; Devadasan et al., 2007; Doubova et al., 2015; Edoka et al., 2017; Fan et al., 2012; Fiestas Navarrete et al., 2019; Fink et al., 2013; Fu, 2021; Gakidou et al., 2006; Galárraga et al., 2010; Glied et al., 2017; Grogger et al., 2015; Gómez-Dantés et al., 2023; Hsu et al., 2021; Jiang et al., 2012; Jing et al., 2013; Jithitikulchai et al., 2021; Jung and Lee, 2021; Karan et al., 2017; Kassa, 2023; Kim and Kwon, 2015; Kim and Kwon, 2023; Knaul et al., 2012; Kusi et al., 2015; Kyriopoulos et al., 2021; Lee and Cheong, 2017; Lee et al., 2022; Li et al., 2012; Limwattananon et al., 2015; Liu et al., 2016; Liu et al., 2017; Liu et al., 2021; Liu et al., 2021; Liu et al., 2022; Lu et al., 2012; Ma et al., 2016; Maritim et al., 2023; Mekonen et al., 2018; Meng et al., 2012; Nannini et al., 2021; Nguyen and Wang, 2013; Nguyen et al., 2011; Prakongsai et al., 2009; Quayyum et al., 2010; Quintal, 2019; Ranson, 2002; Rent and Ghosh, 2015; Saksena et al., 2011; Salari et al., 2019; Salti et al., 2010; Selvaraj and Karan, 2012; Shahrawat and Rao, 2012; Shi et al., 2010; Shi et al., 2022; Somkotra

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Table 2 (*continued*)

Health financing function	Attributes identified from the literature	Attributes proposed by WHO	QCA label	Descriptions from the literature	Studies reporting presence/absence of attribute
					and Lagrada, 2008; Sparrow et al., 2013; Sun et al., 2009a; Sun et al., 2009b; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Thein et al., 2021; Tirgil et al., 2019; Ujunwa et al., 2013; Wang et al., 2014; Wang et al., 2020; Xiang et al., 2016; Xu et al., 2018; Yang, 2015; Yardim et al., 2010; Yardim et al., 2014; Zhang et al., 2019; Zhao et al., 2020; Zoidze et al., 2013)
	Benefit design & implementation	Design: Prior to adoption, service benefit changes are subject to cost-effectiveness and budgetary impact assessments	D	Analyses of medical expenditure patterns Costing exercises to estimate funding requirements Periodic revision of package and/or fee schedules Consideration of epidemiological patterns Gathering of stakeholder views	(Abu-Zaineh et al., 2013; An and Kim, 2020; Assani Arani et al., 2018; Atake, 2020; Barasa et al., 2018; Chantzaras and Yfantopoulos, 2018; Choi et al., 2016; Cros et al., 2019; Doubova et al., 2015; Gakidou et al., 2006; Homaie Rad et al., 2017; Hsu et al., 2021; Jiang et al., 2012; Jung and Lee, 2021; Kazemi-Galougahi et al., 2019; Knaul et al., 2012; Kockaya et al., 2020; Lee et al., 2022; Liu et al., 2021; Prakongsai et al., 2009; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Shi et al., 2022; Sun et al., 2009a; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Wang et al., 2020; Yazdi-Feyzabadi et al., 2019)
		Alignment: Defined benefits are aligned with available revenues, health services, and mechanisms to allocate funds to providers	L	Government funding to cover the provision and/or expansion of benefits Benefits coinciding with insurance coverage expansion Available funds flow to providers, e.g. no payment delays to providers, no stockouts of medicines	(Abdi et al., 2020; Abu-Zaineh et al., 2013; Aggarwal, 2010; Alkenbrack and Lindelow, 2015; An and Kim, 2020; Aryeetey et al., 2016; Atake, 2020; Barasa et al., 2018; Bousmah et al., 2022; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Edoka et al., 2017; Fink et al., 2013; Gakidou et al., 2006; Grigorakis et al., 2014; Guo et al., 2016; Jing et al., 2013; Jithitikulchai et al., 2021; Karan et al., 2017; Knaul et al., 2012; Kockaya et al., 2020; Kwesiga et al., 2020; Lee et al., 2022; Limwattananon et al., 2015; Liu et al., 2021; Ly et al., 2022; Maritim et al., 2023; Meng et al., 2012; Nguyen and Wang, 2013; Nguyen et al., 2011; Sekabaraga et al., 2011; Sun et al., 2009a; Sun et al., 2009b; Ta et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Tirgil et al., 2019; Ujunwa et al., 2013; Xiang et al., 2016; Zhang et al., 2010; Zoidze et al., 2013)
	Co-payment design	Co-payments: Benefit design includes explicit limits on user charges and protects access for vulnerable groups	P	Low co-insurance rates, low deductibles, high or differential ceilings, high reimbursement rates, exemptions or reductions for vulnerable populations Restrictions on extra-billing and/or informal payments Claims process not overly burdensome nor unduly time- delayed	(Abdi et al., 2020; Abu-Zaineh et al., 2013; Aggarwal, 2010; Ahmadi et al., 2021; Amaya Lara and Ruiz Gómez, 2011; An and Kim, 2020; Arenliu Qosaj et al., 2018; Aryeetey et al., 2016; Assani Arani et al., 2018; Atake, 2020; Baicker et al., 2013; Barasa et al., 2018; Bousmah et al., 2022; Bowser and Mahal, 2011; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Choi et al., 2016; Cros et al., 2019; Devadasan et al., 2007; Doubova et al., 2015; Edoka et al., 2017; Ekman, 2007; Fan et al., 2012; Fernandes Antunes et al., 2018; Fiestas Navarrete et al., 2019; Fink et al., 2013; Glied et al., 2017; Grigorakis et al., 2014; Guo et al., 2016; Hsu et al., 2021; Ilesanmi et al., 2014; Jiang et al., 2012; Jing et al., 2013; Jithitikulchai et al., 2021; Kaiser et al., 2023; Karan et al., 2017; Kazemi-Galougahi et al., 2019; Kheibari et al., 2019; Kim and Kwon, 2015; Kim and Kwon, 2023; Kusi et al., 2015; Kwesiga et al., 2020; Kyriopoulos et al., 2021; Lee and Cheong, 2017; Lee et al., 2022; Li et al., 2012; Liu et al., 2016; Liu et al., 2017; Liu et al., 2021; Liu et al., 2021; Liu et al., 2022; Lu et al., 2012; Ly et al., 2022; Ma et al., 2016; Masiye et al., 2016; Mekonen et al., 2018; Meng et al., 2012; Mohammadzadeh et al., 2023; Nguyen and Wang, 2013; Nguyen et al., 2011; Pan et al., 2022; Prakongsai et al., 2009; Prinja et al., 2012; Ranson, 2002; Saksena et al., 2011; Salari et al., 2019; Sekabaraga et al., 2011; Shahrawat and Rao, 2012; Shi et al., 2010; Shi et al., 2022; Sun and Lyu, 2020; Sun et al., 2009b; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Thein et al., 2021; Tirgil et al., 2019; Ujunwa et al., 2013; Wang et al., 2014; Wang et al., 2020; Xiang et al., 2016; Xu et al., 2015; Yang, 2015; Yardim et al., 2010; Yardim et al., 2014; Yazdi-Feyzabadi et al., 2019; Zhang et al., 2010; Zhang et al., 2019; Zhou et al., 2016; Zhou et al., 2022; Zoidze et al., 2013)
Public financial management	Budget development process	Budget formulation and structure support flexible spending and are aligned with priorities	F	Budgets driven by evidence (e.g. service use, costs, enrolment, health needs, provider performance) Programme-based budgeting Budget negotiations between stakeholders Flexibility in resource allocation	(Bowser and Mahal, 2011; Chantzaras and Yfantopoulos, 2018; Fan et al., 2012; Knaul et al., 2012; Kwesiga et al., 2020; Kyriopoulos et al., 2021; Nguyen and Wang, 2013; Selvaraj and Karan, 2012; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015)

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Table 2 (*continued*)

Health financing function	Attributes identified from the literature	Attributes proposed by WHO	QCA label	Descriptions from the literature	Studies reporting presence/absence of attribute
	Budget execution	Providers receive and flexibly manage revenues, and report on spending	X	Facilities given responsibility to spend resources Providers able to manage and use revenues generated/user charges	(Barasa et al., 2018; Bousmah et al., 2022; Edoka et al., 2017; Fiestas Navarrete et al., 2019; Fink et al., 2013; Gakidou et al., 2006; Liu et al., 2022; Nannini et al., 2021; Prinja et al., 2012; Rent and Ghosh, 2015; Sekabaraga et al., 2011; Tangcharoensathien et al., 2015; Xu et al., 2018; Zhang et al., 2019)
Governance	System readiness	System-wide perspective	W	Investments to strengthen the supply-side (infrastructure, health workers, information systems, drug supply) Accessible network of facilities Services of reasonable quality Institutional capacity to administer schemes, management and supervision, stewardship	(Abu-Zaineh et al., 2013; Aggarwal, 2010; Alkenbrack and Lindelow, 2015; Arenliu Qosaj et al., 2018; Assani Arani et al., 2018; Atake, 2020; Bousmah et al., 2022; Bredenkamp and Buisman, 2015; Chantzaras and Yfantopoulos, 2018; Doubova et al., 2015; Edoka et al., 2017; Fernandes Antunes et al., 2018; Fiestas Navarrete et al., 2019; Fink et al., 2013; Gakidou et al., 2006; Grigorakis et al., 2014; Grogger et al., 2015; Gómez-Dantés et al., 2023; Homaie Rad et al., 2017; Jithitikulchai et al., 2021; Kaiser et al., 2023; Karan et al., 2017; Kheibari et al., 2019; Knaul et al., 2012; Kockaya et al., 2020; Kusi et al., 2015; Kwesiga et al., 2020; Kyriopoulos et al., 2021; Li et al., 2023; Liu et al., 2016; Liu et al., 2021; Lu et al., 2012; Maritim et al., 2023; Masiye et al., 2016; Meng et al., 2012; Mohammadzadeh et al., 2023; Nannini et al., 2021; Nguyen et al., 2011; Okunogbe et al., 2022; Patcharanarumol et al., 2009; Prakongsai et al., 2009; Prinja et al., 2012; Quayyum et al., 2010; Rent and Ghosh, 2015; Salari et al., 2019; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Song et al., 2020; Ta et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Taniguchi et al., 2021; Tirgil et al., 2019; Wagstaff and Lindelow, 2008; Wagstaff and Yu, 2005; Xu et al., 2018; Yardim et al., 2010; Yazdi-Feyzabadi et al., 2019; Zhao et al., 2020)
	Monitoring for accountability	Transparent, financial and non-financial accountability	Y	Monitoring/tracking of expenditures Checks for fraud/Checks on provider behavior Formal complaints mechanism Community participation/ Civil society engagement Supporting legislation (e.g. budget laws, mandates for entitlements) and political commitment	(Abu-Zaineh et al., 2013; Aggarwal, 2010; Albright et al., 2021; Amaya Lara and Ruiz Gómez, 2011; Arenliu Qosaj et al., 2018; Aryeetey et al., 2016; Atake, 2020; Baicker et al., 2013; Barasa et al., 2018; Bowser and Mahal, 2011; Chantzaras and Yfantopoulos, 2018; Choi et al., 2016; Edoka et al., 2017; Fan et al., 2012; Gakidou et al., 2006; Glied et al., 2017; Gómez-Dantés et al., 2023; Hajizadeh et al., 2023; Hsu et al., 2021; Jung and Lee, 2021; Kassa, 2023; Kim and Kwon, 2015; Kim and Kwon, 2023; Knaul et al., 2012; Kusi et al., 2015; Limwattananon et al., 2015; Liu et al., 2021; Liu et al., 2021; Lu et al., 2012; Maritim et al., 2023; Meng et al., 2012; Nannini et al., 2021; Nguyen and Wang, 2013; Okunogbe et al., 2022; Prakongsai et al., 2009; Prinja et al., 2012; Quintal, 2019; Ranson, 2002; Rent and Ghosh, 2015; Saksena et al., 2011; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Somkotra and Lagrada, 2008; Sun et al., 2009a; Ta et al., 2020; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tirgil et al., 2019; Wagstaff and Lindelow, 2008; Yardim et al., 2010; Yardim et al., 2014; Zoidze et al., 2013)
	Data and evidence generation	Data and evidence used to inform policy	E	Analysis of data for benefits design and/or expanding coverage Mechanisms to evaluate the impact of policies Capacity to generate evidence and/or investment in institutions to conduct health policy and systems research for policy design	(Abu-Zaineh et al., 2013; Aggarwal, 2010; Arenliu Qosaj et al., 2018; Assani Arani et al., 2018; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Fink et al., 2013; Gakidou et al., 2006; Kim and Kwon, 2023; Knaul et al., 2012; Liu et al., 2021; Meng et al., 2012; Nannini et al., 2021; Prakongsai et al., 2009; Sekabaraga et al., 2011; Selvaraj and Karan, 2012; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2015; Tangcharoensathien et al., 2020; Thein et al., 2021; Tirgil et al., 2019; Wagstaff and Lindelow, 2008; Zhou et al., 2022)

expenditures declined from 27% in 2009 to 12% in 2011, and the decline was significantly greater for insured than uninsured households. Studies of Thailand's Universal Coverage Scheme similarly reported a predominant reliance on public sources and a conducive macroeconomic context during the study period (Limwattananon et al., 2015; Tangcharoensathien et al., 2013; Tangcharoensathien et al., 2020). Reforms were accompanied by an increase in public spending on health and strong economic growth, expansions of fiscal space and sustainable financing. In these studies, catastrophic health expenditures also decreased. In particular, Limwattananon et al. (2015) difference-in-difference comparison of groups for whom coverage was extended against those whose coverage did not change found that out-of-pocket (OOP) expenditure reduced by 28% on average.

A conducive macro-fiscal context was reported to be important for financial protection as growth in the economy or fiscal capacity supported the expansion of the public budget for health and/or extensions of insurance coverage, leading to observed reductions in catastrophic health expenditures (Edoka et al., 2017; Fan et al., 2012; Gakidou et al., 2006; Knaul et al., 2012; Limwattananon et al., 2015; Tirgil et al., 2019; Yardim et al., 2014). In contrast, non-conducive macro-fiscal contexts, e.g. reports of economic decline, had a negative impact on financial protection (Ahmadi et al., 2021; Chantzaras and Yfantopoulos, 2018; Cros et al., 2019; Kazemi-Galougahi et al., 2019; Maceira and Reynoso, 2012; Mohammadzadeh et al., 2023; Taniguchi et al., 2021; Yazdi-Feyzabadi et al., 2019). For example, Tunisia's implementation of structural adjustment programmes was accompanied by reductions in public

Table 3
QCA test results for combinations of revenue raising attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.750)	> Negation of impact (~Y)	
sm	0.655	0.506	31
sM	0.696	0.483	24
Sm	0.770	0.330*	36
SM	**0.861***	**0.204***	**37**
Reduced combinations	SM	S	
Final combination	SM Consistency = 0.861 Coverage = 0.410		

Notes:
S=public source of revenues, M=conducive macro-fiscal context.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Signficant at 5%.

health spending and introduction of cost-sharing in public facilities, thus negatively affecting financial protection (Abu-Zaineh et al., 2013). During the second half of the 1980s, public financing for health decreased by 12 percentage points to 53% of total health expenditures, and was reflected in a significant rise in household OOP expenditures. Similarly, when Greece faced a financial crisis, the country reduced funding on health as part of efforts to limit fiscal deficits and rising debt to GDP ratios (Grigorakis et al., 2014; Kyriopoulos et al., 2021). Authors noted how "financial catastrophe from OOPs [occur] as well in developed economies despite the presence of pre-paid insurance schemes, as a result of the…financial crisis and the painful austerity adjustments" (Grigorakis et al., 2014).

Greater reliance on public funding was reported to influence financial protection with a number of authors reporting how such funds supported coverage extensions (especially to the poor, vulnerable or those outside of the formal sector) by either subsidizing premiums for those without capacity to contribute and/or financing the provision of services (Gakidou et al., 2006; Knaul et al., 2012; Lu et al., 2012; Shi et al., 2010; Sun et al., 2009a; Sun et al., 2009b; Zoidze et al., 2013). In China, Sun et al. (2009b) reported how public revenue was "fundamental to improving NCMS [New Cooperative Medical Scheme] capacity to shield more households from CMP [catastrophic medical payments]". Similarly, Shi et al. (2010) stated "the high coverage rate of NRCMS…is said to be due to its modest premium, the government subsidy, and the strong government mobilization". In Mexico, Gakidou et al. (2006) described how extending tax-based funding to those outside the formal sector helped reduce catastrophic health expenditures, and Knaul et al. (2012) similarly stated how public funding supported expansion of benefits. In Georgia, Zoidze et al. (2013) reported that a 50% increase in public spending supported expansion of the Medical Insurance for the Poor.

While both S and M were found to coincide with financial protection improvements, QCA results suggest that S is relatively more important than M, particularly to avoid negative impact. This may be because S is more directly linked to financial protection with public funds supporting coverage extensions and/or the provision of services, whereas M is more indirectly linked to financial protection as economic decline would impact the health budget before having an effect on household budgets and what they spend OOP.

3.2. Pooling

Two system attributes related to pooling emerged from the literature (Table 2). Redistributive capacity (R) was reported in terms of the size and diversity of risk pools affecting their ability to redistribute financial risks. Harmonization (H) across pools was reported in terms of coherence in benefits across schemes, particularly in the context of scaling-up coverage to universal levels.

QCA test results are shown in Table 4 for all possible combinations of pooling attributes. Consistency scores for the impact of interest show that only the combination RH had a score statistically significantly greater than the set value of 0.75. Two combinations, Rh and RH, had consistency scores for the impact of interest significantly greater than the negation of impact. Thus, only the combination RH passed both tests. A consistency score of 0.830 indicates that a high frequency of studies with this combination were observed together with positive impact on financial protection. A coverage score of 0.472 indicates that across all studies with positive impact, approximately 47% also reported this combination of attributes.

Findings suggest redistributive capacity and harmonization across pools are both important, such that each attribute alone is not sufficient (i.e. the presence of the other attribute is also necessary) for improved financial protection. However, to avoid negative impact on financial protection, results suggest that a system observed to have strong redistributive capacity was more important relative to coherence across funding pools as the combinations Rh and RH would logically reduce to R. Results of sensitivity tests using data from a reduced set of studies (n=50) with no missing data supported findings as RH was found to be important for the impact of interest, albeit not to a significant degree, and R was significantly critical for avoiding negative impact (Appendix 2).

The importance for financial protection of the combined presence of R and H is apparent in studies which evaluated the impact of pooling reforms in Turkey, finding that insured households were significantly less likely to incur catastrophic health expenditures than those uninsured (Yardim et al., 2010; Yardim et al., 2014). The concurrent observance of both attributes alongside progress in financial protection suggest that it is not simply that insurance is provided but *how* this coverage is designed. Indeed, in a study of Argentina, Maceira and Reynoso (2012) found that the population covered by health insurance was actually more exposed to catastrophic health expenditures than the uninsured population with incidence approximately double amongst the insured. Maceira and Reynoso also reported a high proportion of voluntary participation, public coverage predominantly limited to disadvantaged income groups, and high levels of fragmentation leading to coverage gaps among social groups and between provinces (i.e. absence of both R and H). In contrast, reforms in Turkey saw the expansion of coverage to reach uncovered populations which was also accompanied by unification of major schemes and harmonization of benefits across schemes (i.e. presence of both R and H). During this time

Table 4
QCA test results for combinations of pooling attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.750)	> Negation of impact (~Y)	
rh	0.612	0.604	19
rH	0.702	0.489	15
Rh	0.766	0.330*	50
RH	**0.830***	**0.254***	**44**
Reduced combinations	RH	R	
Final combination	RH Consistency = 0.830 Coverage = 0.472		

Notes:
R=Redistributive capacity, H=Harmonization across pools.
Upper [lower] case indicates presence [absence] of attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

period, catastrophic health expenditures were observed to improve (Yardim et al., 2010; Yardim et al., 2014).

How R and H may have influenced financial protection was described in studies evaluating community-based health insurance. Studies in Rwanda (Lu et al., 2012; Saksena et al., 2011; Sekabaraga et al., 2011) reported the importance of government funding in subsidizing premiums for vulnerable groups when scaling-up nationwide and also reported on the 2004 Mutuelles Health Insurance Policy which standardized benefits. These studies also reported a lower probability of incurring catastrophic health expenditures for those insured. In contrast, studies of community-based health insurance schemes in India and in Lao (Karan et al., 2017; Selvaraj and Karan, 2012) failed to show improvements in financial protection. Authors reported how pools tended to be small and less diverse, often targeting only the poor, and therefore less able to share risks. Authors also reported more narrow benefit packages compared to other schemes.

To avoid negative impact on financial protection, QCA results suggest the relative importance of redistributive capacity over harmonization given that combinations Rh and RH would reduce to R as R is always associated with positive impact whereas H is not. Results suggest risk sharing is more directly linked to financial protection, whereas harmonization may be more indirectly linked as it addresses more intermediate objectives of inequities or inefficiencies in coverage.

3.3. Purchasing

System attributes related to purchasing concerned resource allocation mechanisms based on population health needs, equity objectives, and/or provider performance (A), provider payment incentives that support service delivery objective (V) (e.g. through competitive contracting or licensing and accreditation), and payment incentives that ensure budgetary control (C) (e.g. through bundled payment methods) (Table 2). Attributes were broadly discussed as being influential for financial protection because they affect the volume of services provided, and thus related OOP payments.

Table 5 shows consistency scores for combinations of purchasing attributes testing against the impact of interest being greater than 0.75 and greater than the negation of impact. Two of the configurations, aVC and AVC, were identified as significant for both tests and subsequently reduced through Boolean logic to VC. A consistency score of 0.866 for this final combination reflects the finding that a high frequency of studies with these two attributes also observed progress in catastrophic health expenditures. A coverage score of 0.502 indicates that approximately half of the studies from our literature review for which impact on financial protection was observed to be positive also reported this combination of attributes.

Table 5
QCA test results for combinations of purchasing attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
avc	0.677	0.494	16
avC	0.752	0.435*	9
aVc	0.789	0.367*	20
aVC	**0.840***	**0.314***	**22**
Avc	0.689	0.464	15
AvC	0.775	0.382*	10
AVc	0.800	0.353*	15
AVC	**0.868***	**0.250***	**21**
Reduced combinations	VC	V C	
Final combination	VC Consistency = 0.802 Coverage = 0.785		

Notes:
A=resource allocation mechanisms, V=payment incentives for service delivery, C=payment incentives to control budget.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

QCA test results suggest payment mechanisms which ensure budget control and incentivize service delivery objectives are necessary system attributes for improved financial protection. In contrast, to avoid negative impact on financial protection, presence of either individual attribute is sufficient as the set of significant combinations logically reduce to V or C. Results of sensitivity analysis on studies with no missing data (n=13) validated these findings (Appendix 3).

The combined presence of purchasing attributes that support service delivery and budgetary control suggest that even if there are mechanisms on the supply-side to manage overprovision and related OOP payments for unnecessary services, aspects of service provision perceived on the demand-side (e.g. quality) also matter because they influence population care seeking patterns and what people pay in different settings (e.g. use of the more expensive private sector). Nguyen et al. (2011) hypothesized that "without proper regulation and incentives for the supply side to improve quality and availability of services, insurance cannot be an attractive product". The combination VC was highlighted in a difference-in-difference analysis of insurance roll-out for the poor in an Indian state by Fan et al. (2012) who reported a competitive bidding process for selecting an insurance company to manage the scheme, which empanelled hospitals if they met a set of criteria and employed case-based payments with rates set in advance following negotiations between the government (purchaser) and providers. Regression results found a significant reduction of catastrophic health expenditures, albeit only for the first roll-out phase. In a randomized controlled trial of community-based health insurance roll-out in Burkina Faso, where primary care facilities were paid by capitation and facilities were contracted and staffed by certified nurses and trained midwives, Fink et al. (2013) found "a 30% reduction in the likelihood of catastrophic expenditure in targeted areas". Knaul et al. (2012) used descriptive statistics in an evaluation of a set of health system reforms in Mexico implemented from 2003, consisting of resource allocations driven by a legally-mandated formula considering enrolled individuals, health needs and performance; contracts with service providers rewarding responsive care; and a purchasing/provider split that ensured cost-efficiency. Following the introduction of reforms, the incidence of catastrophic health expenditures decreased from 2.7% of households in 2004 to 2.0% in 2010.

The omission of the attribute regarding resource allocation mechanisms (A) in the final combination could be because it is mitigated by the presence of V and C, and/or it may play an indirect role and does not critically influence financial protection. Allocation may more directly impact access to services across geographical areas and/or population groups. For example, Fink et al. (2013) discussed how resource allocations that "adequately reflect…diversity in disease severity among patients…mitigate facilities' incentives to select or dump patients", and that "if not sufficient, it could result in the reduction of financial incentives for health workers…to provide friendly, comprehensive, and high-quality care" – potentially leading individuals to access and pay for services elsewhere. Bredenkamp and Buisman (2015) similarly noted that better targeting of resources towards under-served areas would improve access to care and quality. More research on how resource allocation mechanisms contribute to financial protection is needed.

When examining combinations of purchasing attributes vis-à-vis negative impact on financial protection, findings reduced to individual attribute V and individual attribute C. This suggests the presence of either desirable attribute alone – payment methods with strong budgetary controls or payments methods aligned with service delivery objectives – may be sufficient to avoid negative impact on catastrophic health expenditures. In other words, either attribute can avoid the worsening of financial protection, however both attributes are needed to ensure improvements.

3.4. Benefit design

Five attributes related to benefit design were reported alongside impact on financial protection (Table 2): population understanding of benefits (U), a comprehensive set of covered benefits (B), evidenced-based design process of the package (D), system alignment to support provision of the package (L), and protective co-payment design (P). Attributes were broadly discussed as influencing financial protection because the breadth of publicly provided health services and the obligations to be met by the population to access them, notably any cost-sharing arrangements, will have a direct impact on how much is spent OOP.

Table 6 shows QCA test results for combinations of benefit design attributes. Consistency scores are shown for the impact of interest being greater than a set value of 0.75 and greater than the negation of impact. Six combinations, uBdLP, uBDLP, UBdlP, UBdLP, UBDlP and UBDLP, were identified as significant for both tests and subsequently reduced through Boolean logic to BLP and UBP. An overall consistency score for the two final combinations of 0.860 reflects a high proportion of studies with these combinations also reporting progress on financial protection. A coverage score of 0.505 indicates that half of the studies from our literature review which found a positive impact on financial protection reported either of the two final combinations. There were not enough studies to undertake a sensitivity analysis on complete cases due to the high number of attributes for this function.

Table 6
QCA test results for combinations of benefit design attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
ubdlP	0.762	0.485*	3
ubdLP	0.751	0.479*	1
ubDlP	0.767	0.466*	6
ubDLP	0.762	0.450*	4
uBdlp	0.736	0.387*	3
uBdlP	0.783	0.375*	11
uBdLp	0.764	0.345*	1
uBdLP	**0.830***	**0.306***	**8**
uBDlp	0.738	0.424*	0
uBDlP	0.809	0.340*	5
uBDLp	0.792	0.344*	3
uBDLP	**0.853***	**0.270***	**8**
UbdlP	0.792	0.406*	3
UbdLP	0.784	0.399*	0
UbDlP	0.805	0.382*	2
UbDLP	0.799	0.364*	3
UBdlp	0.775	0.278*	4
UBdlP	**0.868***	**0.242***	**11**
UBdLp	0.821	0.220*	3
UBdLP	**0.878***	**0.209***	**8**
UBDlp	0.771	0.319*	3
UBDlP	**0.878***	**0.230***	**6**
UBDLp	0.860	0.200*	5
UBDLP	**0.903***	**0.171***	**11**
Reduced combinations	BLP UBP	B P	
Final combinations	BLP UBP Consistency = 0.860 Coverage = 0.505		

Notes:
U=population understanding of benefits, B=comprehensive set of benefits, D=evidence-based design process, L=system alignment to support package provision, P=protective co-payment design.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
Given that there are 32 possible combinations (2^n, where n=5 attributes), only those which tested significant are shown.
* Significant at 5%.

The importance of the relationship between U, B and P is demonstrated in various studies. For example, Yang (2015) evaluated the incidence of catastrophic health expenditures before and after reimbursement and found no significant reduction in incidence for the group whose benefits were expanded to cover outpatient services, attributing this to low reimbursement rates. In other words, both B and P need to be present as, even if the range of benefits is broadened, the impact on financial protection will be limited if co-payments are not protective. In contrast, Abu-Zaineh et al. (2013) reported how coverage in Tunisia was extended in 2005 to include inpatient and outpatient services and found catastrophic health expenditures were two times lower for those exempted or benefiting from reduced tariffs. These suggest that even if co-payment was designed to be protective, the population may be unnecessarily paying OOP if their understanding of benefits was low. In a study of a cashless scheme in India, Rent and Ghosh (2015) found a third of those surveyed cited paying for services in public hospitals because of "lack of information". Similarly, even if the range of services is broad, patients may still pay OOP for covered services if they are not aware of their entitlements. In Georgia, benefits were expanded and low initial submission of reimbursement claims was hypothesized to be the result of poorly informed beneficiaries (Zoidze et al., 2013). Zoidze et al. (2013) explained a claims ratio of 65% in 2008 rising to 98% in 2012 as "the increased beneficiary awareness may have contributed to a significant increase in the claims ratio in subsequent years".

In addition to the UBP combination of attributes, QCA tests suggest that positive impact on financial protection is also associated with the combination BLP. Tirgil et al. (2019) evaluated Turkey's Green Card health insurance scheme for the poor during 2003–06, during which time benefits were expanded and cost-sharing reduced. Importantly, as a non-contributory scheme, these changes were aligned with transfers of necessary funds from the Ministry of Finance to the Ministry of Health in order to pay providers for the utilization of services by Green Card enrollees. Authors found the incidence of catastrophic health expenditures was reduced by 19%. In a study in China where the benefit package was enhanced, co-insurance rates reduced and reimbursement ceilings raised, Liu et al. (2021) stressed that "financial protection of the poor cannot be achieved without strong and coordinated supply-side reforms". Authors noted "a titanic fiscal commitment…played the most significant role in this impressive expansion". In addition, "to secure the long-term sustainability…a global budget was introduced in 2012… provider payment reforms such as capitation, diagnostic-related groups, per diem, and bundled payment have been experimented and gradually regularized". In this setting, the percentage of catastrophic health expenditures decreased from 56.1% in 2015 to 48.8% in 2017.

A strong benefits design process based on evidence (D) does not figure in either final combination, however, it is likely that this attribute would contribute to financial protection. It may be that the omission of this attribute is mitigated by the combined presence of BLP, particularly alignment (L). A system aligned to support provision of a package is likely the result of a strong design process, e.g. costing and budgetary analyses would identify funding requirements for a package. Abu-Zaineh et al. (2013) noted that the benefit package in Tunisia was not designed through regular analysis of epidemiological and actuarial data, and argued that "there is a crucial need to conduct such analysis which can help identify the funding requirements and the policy interventions needed to enhance the financial protection capacity of the healthcare system". Studies of benefit extension policies in Korea pointed to the importance of not just analysing cost burdens but also disease burdens and medical usage patterns when determining what benefits to cover as otherwise policy impact would be diluted (An and Kim, 2020; Choi et al., 2016). Indeed, the incidence of catastrophic health expenditures in this setting increased over time. Selvaraj and Karan (2012) argued "the major design flaw of insurance programmes is their narrow focus on… low volume high value financial transactions". Several studies in India and China support this with findings that the incidence of catastrophic health expenditures failed to decrease in settings where packages were

designed exclusively on acute hospital care since a substantial proportion of OOP payments were actually for outpatient services (Karan et al., 2017; Selvaraj and Karan, 2012; Shahrawat and Rao, 2012; Sun et al., 2009a; Zhang et al., 2010).

QCA consistency scores for the negation of impact identified two individual attributes, the set of benefits provided (B) and protective co-payments (P), each significantly important on its own for avoiding a negative impact on catastrophic health expenditures. Indeed, there is a direct link between each of these attributes and financial protection given they determine what is paid OOP.

3.5. Public financial management (PFM)

Reports of PFM attributes in the literature addressed budget formulation (F) in terms of the process for its development and structure and budget execution (X) in terms of the ability to manage and spend funds (Table 2). PFM attributes are important for ensuring health budgets are matched to priorities (e.g. financial protection) and are spent as planned to reach the front line and ensure service delivery.

Table 7 shows QCA test results for various combinations of PFM attributes. Consistency scores for all four possible combinations were similar and only slightly greater than the set value of 0.75, such that no combination tested as significant. In contrast, the four combinations also all tested significant vis-à-vis the negation of impact. As such, QCA did not identify a combination that can be considered necessary/sufficient for positive impact; nor was it able to identify a combination likely to help avoid negative impact. This may be because PFM is too distal to have a definitive impact on financial protection. As PFM cross-cuts all health financing functions (World Health Organization, 2017), attributes may play an indirect supportive role across the system, notably for revenue raising and purchasing. This cross cutting role may explain the limited number of studies reporting on either PFM attribute. As such, sensitivity tests could not be carried out, underlining the need for greater understanding of the role of PFM in health financing arrangements.

Studies in Rwanda, Mexico and Thailand illustrated the combined presence of FX. In Rwanda, health service delivery was decentralized, making facilities legally autonomous with responsibilities over the financial management of resources (including autonomy to retain and manage user fees), and public funds were transferred from Treasury directly to health facilities ensuring that funds could be used flexibly "for facility expenditures or performance-linked salary bonuses". In this broader study context, catastrophic health expenditures declined (Sekabaraga et al., 2011). Knaul et al. (2012) described that before Seguro Popular, the health budget was formulated in a subjective manner driven by politics, but afterwards, budgets were based on evidence regarding enrolment, population health needs, and provider performance. States thus had an incentive for good performance to attract increased financial resources. Authors reported this helped ensure sufficient resources for Seguro Popular and the protection it provided. Similarly, Tangcharoensathien et al. (2013) reported how budgeting for the health sector in Thailand changed after UCS in 2001 from a process where discretionary power was held by the Bureau of Budget and budgets were structured as conventional line-items to one that involves budget negotiations between the Bureau of Budget, the National Health Security Office and other stakeholders based on evidence of service utilization and unit costs, thus dispersing power over budgets and helping to ensure sustainable financing of UCS. In both these contexts, financial protection was observed to have improved following these changes.

The absence of F was often reported as arising when budgets were not aligned with priorities. Kwesiga et al. (2020) described that in Uganda, "the allocation of resources to the health sector from the national budget has not matched the need" and further reported a "lack of critical inputs required to provide quality health care in the public sector". In this study, progress on catastrophic health expenditures was found to be limited. Studies of Greece also reported "myopic budget cuts" and "insufficient financial management and accounting processes" (Chantzaras and Yfantopoulos, 2018). Kyriopoulos et al. (2021) reported how the Greek public budget did not meet increased needs for health care and described how this meant "some households may be unsatisfied with the provision of services due to aspects relating to waiting time, accessibility, responsiveness and quality of care, shifting to private providers and/or bearing the burden of higher OOPE" as well as providers charging informal payments. Regarding the absence of X, Bousmah et al. (2022) reported how "delays in the payment of subsidies by the Senegalese government, forc[ed] CBHI [community-based health insurance] organisations to restrict access to covered healthcare". In this study context, households were not protected against catastrophic health expenditures. Similarly, in Ghana, "providers fac[ed] budget constraints and reimbursement uncertainty. Thus, implementation inefficiencies may be part of the explanation as to why some of the most vulnerable NHIS enrolees are least protected from financial hardship" (Fiestas Navarrete et al., 2019).

Table 7
QCA test results for combinations of PFM attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
fx	0.782	0.389*	30
fX	0.764	0.386*	34
Fx	0.793	0.365*	23
FX	0.796	0.334*	41
Reduced combinations	None tested significantly	All tested significantly	
Final combination	None identified		

Notes:
F=budget formulation, X=budget execution.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

3.6. Governance

Attributes related to governance in health financing were shown in Table 2. The three reported attributes concerned system-wide readiness (W) (e.g. services are available, accessible, and acceptable), monitoring for accountability (Y) (e.g. tracking expenditures, checks on provider behavior, supporting legislation and political commitment, and participatory governance), and evidence generation to inform policy (E) (e.g. capacity to generate data, conduct research).

QCA test results are shown in Table 8 for all possible combinations of governance attributes. Two of the configurations, WYe and WYE, had consistency scores significantly greater than the set value of 0.75 and greater than the negation of impact. These two combinations were subsequently reduced through Boolean logic to WM. A final consistency score of 0.885 reflects a high frequency of studies with these two attributes also observing progress in reducing catastrophic health expenditures. A coverage score of 0.513 indicates that more than half of the studies from our literature review for which impact on financial protection was observed to be positive also reported this combination of attributes. Results of sensitivity tests using data from a reduced set of studies (n=16) with no missing data validate the necessity of WY.

Studies demonstrating the combined attributes of system-wide readiness (W) and monitoring for accountability (Y) include those of Mexico by Gakidou et al. (2006) and Knaul et al. (2012) who reported on complementary investments in infrastructure and the health workforce, as well as how "political consensus [was] necessary to reform the health system" and "civil society has also contributed to the process of implementing the reform by sharing knowledge and encouraging patient

Table 8
QCA test results for governance attributes.

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
wye	0.590	0.647	15
wyE	0.656	0.595	10
wYe	0.739	0.450*	18
wYE	0.766	0.422*	21
Wye	0.785	0.390*	9
WyE	0.802	0.369*	9
WYe	**0.878***	**0.238***	**17**
WYE	**0.883***	**0.209***	**29**
Reduced combinations	WY	W	
		Y	
Final combination	WY		
	Consistency = 0.885		
	Coverage = 0.513		

Notes:
W=system-wide readiness, Y=monitoring for accountability, E=evidence generation to inform policy.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

involvement". In Thailand, Prakongsai et al. (2009) and Tangcharoensathien et al. (2015) similarly reported the importance of strengthening district networks to support population access to services as well as medical audits, call centers and various legislative acts. In these studies, catastrophic health expenditures decreased over time. In contrast, a study by Wagstaff and Lindelow (2008) of China reported both overall poor quality of care alongside weak monitoring systems and no checks on provider behaviors. In this context, insurance actually increased the risk of catastrophic health expenditures.

The attribute W was described as important to financial protection by Bredenkamp and Buisman (2015) who argued that "reaching financial protection goals will require matching the expansion of the demand for health care through health insurance with supply-side readiness". Bowser and Mahal (2011) also hypothesized that "financial burden was linked to poor quality and low levels of physical access…lack of availability of drugs and diagnostics, overcrowding and long waiting times". This hypothesis was tested by Grogger et al. (2015) who analysed data from a field experiment in Mexico and found significant reductions of catastrophic health expenditures in households with access to facilities within a 10-kilometer radius of residence and staffed with more than one doctor and two nurses compared to those with no health facility within a 10-kilometer radius or facilities with only basic staffing. Regarding attribute Y, several studies reported how various accountability measures (e.g. publication of procedure rates, call centers for grievances, civil society/community engagement, provider checks/facility monitoring) curbed profit-seeking behavior, reduced fraud and stemmed unauthorized charging of payments – thus contributing to financial protection (Fan et al., 2012; Kassa, 2023; Kusi et al., 2015). Political commitment to reforms was cited as accounting for achievement of health financing reform objectives in studies of Mexico, Rwanda, Thailand and Turkey (Gakidou et al., 2006; Knaul et al., 2012; Lu et al., 2012; Sekabaraga et al., 2011; Tirgil et al., 2019). Similarly, supporting legislation, particularly related to the budget or mandates for entitlements, were also reported as key to financial protection. Gómez-Dantés et al. (2023) noted policies "counted on a strong legal foundation that guaranteed the mobilization of resources to provide financial protection in health to >50 million people".

The omission of evidence generation (E) in the final combination requires further research to understand its connection to an intervention's impact on financial protection. That it did not figure in the result could be because it does not critically influence financial protection or because its absence is mitigated by the presence of monitoring for accountability (Y), which inherently relies on evidence and data analysis. This latter explanation is supported by studies identified in our literature review. For almost all studies, when monitoring for accountability was reported, so was evidence generation, and when it was absent so was the other. Studies exemplifying this include Sekabaraga et al. (2011) who reported a demand for accountability by politicians in Rwanda together with established mechanisms to generate performance data and evaluate the impact of policies. In this context, financial protection also improved. In contrast, Selvaraj and Karan (2012) described how in India "part of the problem lies in utter neglect of governance…poor monitoring and lack of accountability in the system". In their analysis, the incidence of catastrophic health expenditures was higher in intervention districts where the state government-based insurance scheme, RSBY (Rashtriya Swasthya Bima Yojna), was implemented.

When examining combinations of governance attributes against the negation of impact, the findings reduced to individual attribute W and to individual attribute Y, suggesting that either attribute alone – system-wide thinking or monitoring for accountability – may be sufficient to avoid negative impact on financial protection. In contrast, while either attribute can avoid the worsening of financial protection, both attributes are needed to ensure improvements in financial protection.

4. Discussion

This analysis identified patterns of underlying health financing system attributes which coincided with impact of policy interventions on financial protection. It drew on a rich set of data extracted from a systematic literature review. Data were reported across diverse health financing systems as part of evaluating different policy interventions, reflecting a range of country reform experiences at varying points in time. QCA techniques were applied to analyse and synthesize patterns in data. The QCA approach provided unique insights regarding the pathway from intervention to achieving positive impact and mitigating negative impact.

There are four key findings from this study. First, we find empirical support for system attributes reported in the literature and proposed by WHO (Jowett et al., 2020) being critical for countries to consider as they implement policies to progress towards UHC. Consistency scores for final combinations of attributes all ranged above 80%, reflecting a high degree of intersection between attributes and positive impact on financial protection, indicating their importance; in addition, coverage scores were all approximately 40%, suggesting final combinations coinciding with positive impact were sufficiently represented in our data.

Second, findings indicate combinations of more than one attribute were needed to foster positive impact whereas only an individual attribute was needed to avoid negative impact. For example, provider payment mechanisms that either ensure budgetary control or that incentivize service delivery objectives were found to be individually sufficient to avoid negative impact on financial protection, but results showed both are necessary to foster positive impact. Our findings were also supported by literature reviews, such as that by Das and Do (2023), who evaluated experiences with health insurance across low- and middle-income countries and concluded that while insurance did generally improve financial protection, supply-side factors (e.g. quality of care, provider behavior) were also important.

Third, findings reveal that attributes can have a direct or indirect impact on outcomes. For example, reliance on public sources of revenue more directly affects financial protection as it supports coverage extensions and/or provision of services. In contrast, a conducive macro-fiscal context was assessed to be more indirectly linked to financial protection as economic decline would impact the government health budget before having an effect on household budgets and what is spent OOP. This finding thus provides insight into how countries might

Table 9
Patterns of health financing system attributes mapped to impact on financial protection.

	Revenue raising	Pooling	Purchasing	Benefit design	Governance
To avoid negative impact	Reliance on public sources	Redistributive capacity	Provider payment incentives that ensure budgetary control OR Incentives that support service delivery	Comprehensive set of benefits OR Protective co-payment design	System-wide perspective OR Monitoring for accountability
To foster positive impact	Reliance on public sources AND Conducive macro-fiscal context	Redistributive capacity AND Harmonisation across pools	Provider payment incentives that ensure budgetary control AND Incentives that support service delivery	Comprehensive set of benefits AND Protective co-payment design AND (Population understanding of benefits OR System alignment to support provision of the package)	System-wide perspective AND Monitoring for accountability

prioritise attributes when designing their health financing reforms.

Fourth, findings reveal that attributes have complex interdependencies and can be synergistic, opposing or mitigating. For example, the gains from a predominant reliance on public revenues, such as supporting coverage expansion, will be magnified if the macro-fiscal context is conducive to sustainable fiscal space for health. On the other hand, flexibly formulated health budgets can potentially hinder efforts for budgetary control. Attributes can also mitigate each other, e.g. a strong evidence-based process to design a benefit package can allay misalignment, especially vis-à-vis financial support needed by the system for its provision. Thus, it is important to consider the relationship among attributes when designing policy interventions to help ensure desired impact.

We highlight three key strengths of this study. First, we have adopted a unique analytical approach, looking simultaneously at evidence on the impact of interventions and on attributes of health financing systems. The study thus provides greater insight into the effectiveness of health financing interventions than would be derived from a traditional systematic review of impact or from a realist review of health financing reforms. Our study synthesizes the rich description of system attributes across study contexts, systematically looks at interdependencies, and measures the strength of connections with impact in a more innovative way than a narrative synthesis. Other studies have approached the question of what renders health financing policy more effective by drawing lessons across implementation contexts to propose good practices or key principles countries should follow, but these studies are unable to quantitatively assess the strength of such connections to outcomes (Gottret et al., 2008; Kutzin et al., 2010; Kutzin et al., 2017). QCA is a technique particularly suitable for uncovering and analysing patterns in complex relationships when heterogeneity is expected. Rather than isolate and test explanatory factors, QCA has a key advantage in that it is explicitly focused on analysing configurations of multiple conditions and its basis on Boolean logic allows for, even expects, interactions. Our application of QCA techniques presents the opportunity for a comprehensive examination of all combinations of explanatory factors critical to intervention impact and robust assessment of the degree to which they coincide with positive impact, helping to understand what is necessary and/or sufficient for improving effectiveness of an intervention.

The second strength of our analysis is the richness of our data. Our analysis leverages data typically ignored in meta-analyses of systematic literature reviews, namely observations of the implementation context. Data extracted from the literature thus went beyond evidence regarding impact of the intervention reported in the results section of studies, and included information concerning the underlying health financing system attributes discussed in introduction and/or discussion sections of published papers. The dataset was thus assembled from data consciously studied but also data coming from authors' observations regarding the broader setting. This added richness to understanding of patterns that can affect intended change.

A third strength of our study is that it rigorously brings evidence together into a comprehensive yet practical mapping of patterns which characterize the health financing system through which interventions work. We attempted to systematically untangle interdependencies of a multi-faceted system into a set of structured patterns (Table 9). Up until now, there has been a lack of evidence analysing the interconnections between interventions, system attributes and impact. Our findings can help inform the design and implementation of health financing interventions and facilitate progress towards financial protection.

Our study also has a number of limitations. The main limitation is that we analysed attributes by individual financing function, and thus were unable to capture the importance of interactions across the health financing system. This function-by-function approach was adopted to overcome challenges of limited diversity as, with 17 system attributes there would be $2^{\wedge 17}$ possible combinations. However, analysing attributes by function provided important insight into which attributes are more strongly connected to impact. Findings from this analysis may thus inform the design of future studies which could analyse a subset of attributes across all health financing functions found to be more directly linked to financial protection (i.e. those identified to come earlier in the results chain in terms of avoiding negative impact) and thus assess interactions across the entire health financing system.

A second limitation is that the empirical basis for the analysis between health financing system attributes and financial protection was not always the result of a specific investigation into the causal effect of attributes and relied on reports by researchers describing the broader financing context in which a tested intervention was implemented. Nevertheless, data consisted of observable and objective characteristics of the system (e.g. whether participating in an insurance scheme is mandatory or voluntary is neither obscure nor subjective). Although attributes themselves may not have been explicitly tested in the original source, the reported financing system context in which a tested intervention was being implemented served as data points for the analysis of patterns in this paper. Given our data comes from literature gathered through a well-defined, systematic and comprehensive search strategy, we considered this an appropriate approach for a complex research question lacking a well-developed evidence base. Data patterns should not be interpreted as cause and effect, but rather as a structured set of relationships between determinants and outcomes.

Another limitation is the issue of attributes not reported by authors. Such non-reports should not be interpreted as a weak relationship to impact. Reasons for non-reports are unknown and could be because the attribute was not considered relevant, not observed, and/or not understood. Regardless of the reason, the lack of reporting was unlikely to have been purposeful. In addition, any potential for bias in reporting would have been mitigated by the synthesis across multiple studies. To handle missing data, we followed imputation approaches recommended in QCA literature (De Block and Vis, 2019). Our primary analysis is thus

based on all studies identified from the literature review where missing data was imputed. We considered this the best approach as it maintains greater power. Further, our sensitivity analysis, which relied on complete cases, found similar results and thus provides greater confidence in the robustness of our findings.

Our study did not analyse by the method for estimating catastrophic health expenditures (i.e. budget share or capacity-to-pay). While Hsu et al. (2018) showed global monitoring was sensitive to methods, that analysis was making cross-country comparisons. At country-level, sensitivity to thresholds became an issue only at thresholds (i.e. 35% using the budget share approach) greater than those conventionally used (Hsu et al., 2021). Furthermore, many studies in our analysis employed both methods using various thresholds (often to assess sensitivity) with the same general conclusion regarding direction of effect (Gakidou et al., 2006; Kassa, 2023; Liu et al., 2021; Tangcharoensathien et al., 2020; Yazdi-Feyzabadi et al., 2019). Das and Do (2023) also concluded improvement in financial protection as a result of insurance "holds across studies that use different measures of financial protection".

Areas for future research include further examination of those attributes which were infrequently reported by studies. Purchasing and PFM particularly deserve additional attention, specifically resource allocation mechanisms to purchase services and the formulation and execution of health budgets. More evidence is needed to understand how these attributes are associated with financial protection. Future research should also analyse combinations of attributes across all health financing functions. Lastly, there may be interest to formally test the causality between attribute and impact.

While it has been recognized that the broader context and underlying health system are influential in determining whether policy impact is reached (Kutzin, 2001), evidence on specific combinations of health financing system attributes that facilitate or impede impact on financial protection is lacking. This study thus has practical applications as it can support policymakers implementing interventions by providing evidence on which attributes are necessary and sufficient to enhance performance.

There is a need for more health systems research that moves beyond narrowly focused evaluations and is designed to increase our understanding of what renders an intervention more or less effective. Too often studies have focused on outcomes without adequate consideration of the implementation and political economy context, and have not unpacked the impact pathway and examined connections between intervention, underlying health financing system attributes and final impact. Studies that move from focusing on a single aspect of the change process to embrace a broader change framework, including incorporating underlying analysis of political contexts alongside system attributes, will build greater understanding of some of these important co-determinants. This knowledge can then be leveraged to inform the design and implementation of policies and foster progress towards UHC.

CRediT authorship contribution statement

JH conceptualized the study as part of her doctoral degree, performed the analysis of all data, wrote the original draft of the manuscript, and revised subsequent drafts of the manuscript. KH guided the study design, contributed to the original draft and reviewed subsequent drafts of the manuscript. MJ and AM provided critical input as they reviewed drafts of the manuscript. All authors read and approved the final manuscript.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. QCA test results for combinations of revenue raising attributes, using complete case analysis (n=32 studies)

	Impact of interest (Y)		Number of studies
	> Set value (0.750)	> Negation of impact (~Y)	
sm	0.533	0.556	11
sM	0.600	0.600	1
Sm	0.625	0.469	8
SM	**1.000***	**0.000***	**12**
Reduced combination(s)	SM	SM	
Final combination(s)	SM		
	Consistency = 1.000		
	Coverage = 0.517		

Notes:
S=public source of revenues, M=conducive macro-fiscal context.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

Appendix 2. QCA test results for combinations of pooling attributes, using complete case analysis (n=50)

	Impact of interest (Y)		Number of studies
	> Set value (0.750)	> Negation of impact (~Y)	
rh	0.250	0.950	6
rH	0.250	0.750	1
Rh	0.696	0.343*	24
RH	0.824	0.176*	19

(continued on next page)

(*continued*)

	Impact of interest (Y)		Number of studies
	> Set value (0.750)	> Negation of impact (~Y)	
Reduced combination(s)		R Consistency = 0.750 Coverage = 0.985	
Final combination(s)			

Notes:
R=Redistributive capacity, H=Harmonization across pools.
Upper [lower] case indicates presence [absence] of attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

Appendix 3. QCA test results for combinations of purchasing attributes, using complete case analysis (n=13)

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
avc	0.250	0.750	1
aVc	0.804	0.268	3
aVC	**1.000***	**0.167***	**1**
Avc	0.250	0.750	1
AVC	**1.000***	**0.000***	**7**
Reduced combination(s)	VC	VC	
Final combination(s)	VC Consistency = 1.000 Coverage = 0.633		

Notes: No studies reported combinations of avC or AvC.
A=resource allocation mechanisms, V=payment incentives for service delivery, C=payment incentives to control budget.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

Appendix 4. QCA test results for combinations of governance attributes, using complete case analysis (n=16)

	Impact of interest (Y)		Number of studies
	> Set value (0.75)	> Negation of impact (~Y)	
wye	0.125	0.875	2
wYe	0.500	0.750	1
WYe	**1.000***	**0.000***	**2**
WYE	**0.909***	**0.091***	**11**
Reduced combination(s)	WY	WY	
Final combination(s)	WY Consistency = 0.922 Coverage = 0.940		

Notes: No studies reported combinations of wyE, wYE, Wye, WyE.
W=system-wide readiness, Y=monitoring for accountability, E=evidence generation to inform policy.
Upper [lower] case indicates presence [absence] of desirable attribute.
Bold indicates combinations which tested significant against the set value and the negation of impact.
* Significant at 5%.

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