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Achieving Sustainable Health Financing for Universal Health Coverage (UHC) in Low- and Middle-Income Countries (LMICs) through Mandatory Health Insurance Schemes: A Systematic Review

Timothy Akinmurele

t.akinmurele@lancaster.ac.uk

Lancaster University https://orcid.org/0000-0003-1411-5397

Olaniyi Taiwo

Intercountry Centre for Oral Health, Jos, Plateau State,Nigeria

Olatoun Adeola

Equitable Health Access Initiative

Akin Oyebade

Osun State Agency for the Control of AIDS

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Abstract

Background

Over the past 2 decades, universal health coverage(UHC) has been a global health priority. As recommended by the World Health Organisation (WHO), many low- and middle-income countries(LMICs) are adopting mandatory health insurance schemes (MHISs) as the most promising mechanism for achieving equitable financing of healthcare services, financial risk protection and UHC.

Objective

To evaluate the possibility of LMICs, especially Sub-Saharan Africa (SSA) countries, achieving UHC through the implementation of the MHIS.

Methods

We reviewed evidence from 15 databases, including MEDLINE, EMBASE, CINAHL, and MEDLINE Complete (EBSCOhost), for eligible studies available by 22 April 2023. Data on gross domestic product(GDP) and poverty indicators for LMICs were obtained from the World Bank Databases (World Development Indicators). Qualitative, quantitative and mixed methods studies in English-language articles assessing the impact of mandatory health insurance schemes on UHC outcomes were included. Studies outside LMICs and those lacking relevant outcomes were excluded. There was no date restriction. After duplicate removal, we screened 6,162 articles, from which 40 relevant studies were selected for data extraction, using the inclusion and exclusion criteria. A customiseddata extraction form was used to extract the data, and the Quality Appraisal for Diverse Studies (QuADS) tool was used for quality assessment.

A narrative synthesis approach was used to synthesise qualitative and quantitative evidence from the studies. Pearson correlationand linear regression tests were conducted to determine the impacts of gross domestic product(GDP) and national poverty levels on population coverage. The included studies were predominantly mixed-method designs and assessed national and social health insurance schemes across 54 LMICs. This protocol for this review was registered a priori in PROSPERO (registration # CRD42023405027).

Results

The major sources of funding for the MHIS were premium contributions, government revenue allocation, taxation (general or earmarked), taxeson tobaccoand alcohol(sin tax), 10% taxeson mobile phones, compulsory Levy (the general solidarity contribution), and donor funding.

For the primary outcome (level of population coverage), most countries with high levels of population coverage were outside SSA—Thailand 100%, China 98%, Iran 96%, the Philippines 90%, and Indonesia 81% (largest single-payer, 203 M enrollees). High population coverage in SSA was reported only in

Rwanda, with 88% coverage (government-run CBHI counted as national), Ghana, with 58%, and Gabon, with 40%.

The review revealedmixed evidence across contexts for the secondary outcome (financial risk protection). Reductions in out-of-pocket (OOP) payments/catastrophic health expenditures (CHEs) were reported in countries such asThailand (CHE fell from 6% to 2%, impoverishment from 1.4% to 0.3%). Persistent high OOP rates have been reported in several SSA countries despite health insurance(e.g., Nigeria,77%;Kenya,47%).

Conclusion

Insights from LMICs that have reported successful MHISs, including Indonesia, Mexico, Peru, Thailand, and even Rwanda and Ghana (in SSA), reveal that strategic policy design, strong political will and context-specific financing models are essential for success. The success of NHI schemes is stronglydependent on the capacity of countries to successfully address several complex and multifaceted factors, including macroeconomic conditions, political commitment, sound institutional frameworks, strategic policy designs, and poverty reduction. The heterogeneity of theincluded studies, incomplete reporting of some outcomes, reliance on narrative synthesis and nongeneralizability across LMICs are limitations of this study.

1. INTRODUCTION

Universal health care (UHC) means that everyone in the population has unrestricted access to and receives a certain level of high-quality healthcare services without experiencing financial challenges (1). The UHC is seen as the central health strategy for achieving health-related Sustainable Development Goals (SDGs) and the right to health for everybody (2). It is considered the core vehicle for ensuring availability and access to improved healthcare for all (3), with the promise of improved health and financial risk protection, especially for the poorest people and improved health outcomes (1, 4). Thus, the pursuit of UHC is relevant to every country because they all seek, to varying degrees, to improve equity in the use and quality of healthcare services and achieve financial protection for their populations (5).

In 2014, the WHO and the World Bank (WB) developed a framework for tracking countries and global progress toward UHC. The framework aimed to measure progress towards UHC through the assessment of two complementary and critical components of UHC: the level of population coverage of essential healthcare services and financial risk protection. Assessment and monitoring of the progress made in these two UHC components are important for achieving the desired health outcomes, protection of household incomes, and poverty reduction (6).

Out-of-pocket payment for healthcare creates financial barriers and exposes individuals and households to catastrophic health expenditures, defined as spending more than 40% of household expenditures excluding food or more than 10% of total household expenditures on healthcare services (7), which may

tip them into poverty (8-11). One of the fundamental goals of UHC is the elimination of delays or denials in access to healthcare due to the financial restrictions posed by out-of-pocket payments and user fees (10, 12, 13).

Sustainable healthcare financing, which entails the efficient utilisation of financial resources to achieve equitable healthcare coverage, is a key component of the WHO health systems building block and is crucial for achieving UHC (14). Health financing directly influences the access to and quality of healthcare services; hence, it directly impacts the general performance of the healthcare system. The drive to fast-track progress toward UHC is triggering reforms in the health financing systems of several countries across the globe (15-20).

The WHO recommends mandatory health insurance schemes (MHISs) as the most promising mechanism for achieving equitable financing of healthcare services, financial risk protection and UHC (21, 22). Mandatory social health insurance schemes (MHISs), which usually operate via legislation, make membership and contributions in health insurance schemes compulsory for entire populations. Many LMICs are adopting mandatory health insurance schemes, in the form of social or national health insurance schemes, as the preferred source of sustainable revenue for financing their healthcare systems for UHC (17-20, 23, 24).

Many LMICs have adopted mandatory social health insurance schemes (MHISs), specifically large government-owned schemes that cover their entire population, as the preferred mechanism for financing their healthcare systems (25). MHISs are popular options in healthcare financing reforms for UHC because they serve as potential sources of sustainable revenue, help improve social inclusion, reduce out-of-pocket payments and offer financial risk protection at the population level (17-19, 24, 26). Through the adoption of robust MHISs, some LMICs have achieved significant progress toward UHC (13, 27).

While strong evidence exists on the capacity of MHIS to help increase the utilisation of healthcare services, provide financial risk protection and foster social inclusion among populations in some LMICs (24), population coverage remains abysmally low in several LMICs, especially in SSA, where an overwhelming majority of the population operates in the informal sector of the economy (28). Available data from Demographic and Health Survey reports in 36 of the 46 countries in SSA reveal that only 8 countries have more than 10% of their population covered on any health insurance scheme: Rwanda (78.7%), Ghana (58.2%), Gabon (40.8%), Burundi (22%), Kenya (19.9%), Namibia (18.8%), South Africa (14.9%), and Zimbabwe (11.6%) (25).

Thus, given the poor progress recorded by several LMICs despite their adoption of MHISs, a systematic review of the literature is needed to identify empirical evidence on the feasibility of achieving UHC in LMICs, especially in SSA, through the MHIS. A scoping review of the literature conducted by the authors revealed that evidence on the impact of health insurance schemes in LMICs is incomplete, fragmented, and patchy, with few studies focusing on MHIS. There is a paucity of evidence on the feasibility of achieving UHC in LMICs through MHIS (24, 29, 30). This systematic review aims to generate contemporary empirical evidence on the feasibility of achieving UHC in LMICs through MHIS.

Objective

To evaluate the possibility of achieving sustainable health financing for UHC in LMICs, especially SSA countries, through MHIS.

Review Question

Can LMIC and SSA Countries achieve UHC through MHIS?

Outcomes of interest

Primary outcome of interest:

1. Level of population coverage: proportion of the population enrolled in the health insurance scheme.

The secondary outcomes will include the following:

2. Financial risk protection: access to needed healthcare without experiencing unwarranted financial hardship.
3. Service Coverage: benefit package of the health insurance scheme.

2. MATERIALS and METHODS

2.1 Protocol Design and Registration

This systematic review was conducted in compliance with the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) reporting guidelines and registered with the International Prospective Register of Systematic Reviews (PROSPERO) in April 2023 (registration # CRD42023405027).

To enable the researchers to unpack the review question into its key concepts and identify relevant search terms, the Population, Intervention, Comparison, Outcome and Study design (PICOS) framework was applied (31):

Population: LMICs and SSA Countries

Intervention: Mandatory Health Insurance Schemes (which include National and Social Health Insurance Schemes)

Comparator: No comparators are considered in this review.

Outcomes: The outcomes of interest for this review are measures of progress made toward achieving UHC (32) on the Mandatory Health Insurance Schemes, as measured by 3 selected outcome indicators of UHC (32) and health insurance schemes (33, 34):

Primary outcome of interest:

1. **Level of population coverage:** proportion of the population enrolled in the health insurance scheme and accessing quality healthcare services.

The secondary outcomes include the following:

2. **Financial** risk protection: Access to needed healthcare by individuals and households without experiencing unwarranted financial hardship or threats to their living standards. The indicators include the percentage of out-of-pocket (OOP) payments for health in the country's total health expenditure and the share of families facing catastrophic health expenditures (35-37).
3. **Service Coverage:** healthcare services available for enrollees on the benefit package of the health insurance scheme.

Study Design: Quantitative, Qualitative and Mixed Methods Studies

2.2 Eligibility criteria

Table 1: Inclusion criteria

No.	Inclusion Criteria (Derived from PICOS Framework and Review Question)	Rationale
1.	Studies that review the impact of MHIS.	Ensure that all included studies measure and report the same outcomes of interest.
2	Studies that review the impact of MHIS in LMICs and SSA	Ensure the study is limited to LMICs and SSA
3.	Qualitative, quantitative, or mixed methods studies.	Ensure adequate literature is covered to answer the review question
4.	Studies must be published in the English language	Ensure the avoidance of the need to translate scientific work.
5.	Peer and non-peer-reviewed and grey literature	Grey literature from relevant websites will be included to addressed question
6.	There will be no date restrictions on studies to be included	Accommodate relevant studies to answer the review question

Table 2: Exclusion criteria

No.	Exclusion Criteria	Rationale
1.	MHIS studies outside SSA and LMIC countries	The review is focused on MHIS in LMIC and SSA Countries
2	Studies that do not measure any of the outcomes of interest	Review MHIS based on the primary and secondary outcomes of interest
3.	Studies not published in the English language	No translation capacity
4.	Editorials and letters	Focus on original studies and relevant grey literature

2.3 Information Sources

The electronic bibliographic databases for the search were selected on the basis of their likelihood of indexing articles on the subject areas of health, UHC, and healthcare financing. The following databases were searched between the 8th of March and the 22nd of April 2023:

1. MEDLINE Complete (EBSCOhost)
2. CINAHL (Cumulative Index to Nursing and Allied Health)
3. PsycINFO
4. Academic Search Ultimate
5. Business Source Complete
6. Web of Science
7. Scopus
8. OVID Complete
9. EMBASE (Ovid interface)
10. HINARI
11. Cochrane Database of Systematic Reviews
12. Biomed Central's Systematic Reviews
13. PROSPERO (for relevant, ongoing, or recently concluded systematic reviews)
14. Trip Database (Pro)
15. Overton.io

To access additional journals from other databases, the researchers also conducted supplementary, bibliography, and citation searches on Google Scholar (38). Researchers have explored TRIP Pro, Overtonio, the World Bank, WHO databases and government reports to identify relevant gray literature, including unpublished manuscripts, service commissioning documents, guidelines, policies, conference proceedings, white papers, working papers and reports (39).

2.4 Search strategy

The review questions and objectives guided the search strategy for this study, and the search process was iteratively conducted in several phases (40, 41). To identify existing terms and synonyms for database searches, the lead author conducted an initial scoping search in Medline and Google Scholar to identify and understand common terminology and acronyms in the subject area. The reviewers utilised the PICOS framework and the results of the scoping search to develop key search terms through a brainstorming session (24, 29, 30, 38, 42, 43).

To retrieve as many studies as possible, the lead reviewer (TA) conducted a highly sensitive search strategy (HSSS) on the databases. This entailed combining key terms from medical subject headings (MeSH) or Thesaurus terms and free text terms applied to the title, abstract, and key word fields to identify relevant studies. The Boolean operator 'OR' was applied to group synonyms within each concept, and 'AND' was used to combine different concepts. To ensure that all subheadings are included where applicable, all subject terms were "exploded" during the search (44, 45). Detailed documentation of the search strategy is available in Supplementary Information 7.

One of the reviewers, OA, independently conducted a search strategy test to assess the sensitivity of the HSSS and ensure that key papers were not missed. The researcher selected six high-impact index publications, searched for them in the HSSS results and found all of them (45).

2.5 Study selection process

Deduplication

The lead reviewer, TA, exported all 9,738 references generated through the HSSS from the databases into EndNote for a seven-pass deduplication process (46). At the end of the seventh pass, only 6,162 references remained.

Screening and Selection of Papers

Following the deduplication process, the lead author exported the 6,162 references from EndNote 20 into Rayyan.ai for a structured two-stage screening process by two reviewers, TA and OA. The two reviewers worked independently on Rayyan.ai (using the blinding feature) to minimise bias and ensure objectivity.

Stage One: Title and Abstract Screening – Articles were reviewed with their titles and abstracts, and the inclusion and exclusion criteria were used (45). A total of 144 references were selected for a full-text review.

Stage Two: Full Text Review - The full texts of the 144 studies were reviewed further, articles that failed to meet the inclusion criteria were excluded, and the reasons for their exclusion were systematically documented (47).

The blinding was lifted upon completion of the independent reviews. All conflicts between the two reviewers were resolved through detailed discussions with the broader research team until a consensus

was reached on the 36 studies to be included in the final review.

Supplementary Pearl Search (TA) performs backwards citation tracking by reviewing the reference lists of some included strong articles to identify other relevant publications that may have been missed during the HSSS (Aveyard et al., 2021; Booth et al., 2016; Walshe & Brearley, 2020). Four additional high-impact studies were discovered and included via this supplementary search.

2.6 Data Extraction

Data extraction from the included studies was conducted via a customised data extraction form developed by the lead author by reviewing and adapting standardised data extraction tools used in other similar reviews (48). The form was refined by the research team to ensure alignment with the review objectives and the PICOS framework. The form had 10 sections and 37 extraction items, including author, year of publication, country, study design, type of health insurance scheme, outcomes of interest (population coverage, financial risk protection and service coverage), quality and limitations of the study.

Two reviewers (NT and OA) independently piloted the final tool on five selected papers. The review team compared the completed extraction forms from the reviewers to ensure that the research objectives were met and that all conflicts were addressed through discussion and consensus agreement (38, 49). Two reviewers (TA and OA) independently conducted the data extraction exercise (49). All differences and discrepancies in the data extracted by the two reviewers were resolved through discussions with the larger review team until 100% agreement was reached. The completed data extraction tool is submitted as Supporting Information 3.

2.7 Methodological quality appraisal

Owing to heterogeneity in methodologies among the included studies, the authors used the Quality Appraisal for Diverse Studies (QuADS) tool to appraise all studies critically. The QuADS is a validated tool that uses a unified framework to ensure consistent assessment across studies, regardless of their methodology. The tool was developed specifically as a single integrated quality assessment tool to evaluate the methodological and reporting quality of studies in systematic reviews, and it has strong interrater reliability (k=0.66) (50).

The team pilot tested the QuADS tool for critical appraisal on 5 selected articles. Scores were applied on a four-point scale (0 to 3) across thirteen criteria, including the theoretical framework, research aim(s), setting/population, study design, sampling, rationale for data collection tools, appropriateness of data collection tools, data collection procedures, recruitment data, justification of analytical methods, appropriateness of analytical methods, engagement of research stakeholders and discussion of strengths and limitations (50). The team iteratively discussed and consolidated the scoring pattern for high-, moderate- and low-quality studies.

Two reviewers, TA and OA independently applied the tool to each of the included studies. The studies were categorised as high, moderate or low on the basis of their overall scores.

The reviewers did not reject any included studies on the basis of their quality score (51). The QuADS tool facilitated a thorough discussion among the reviewers on the strengths and limitations of each study in relation to the overall review objectives. All discrepancies in the scoring of the independent reviewers were resolved through discussion with the entire review team until a consensus and 100% agreement were reached on the final quality scores. Most of the studies had high to moderate quality scores.

2.8 Data analysis/synthesis

The authors could not conduct a meta-analysis in this review because of the heterogeneity of the included studies concerning study designs, population groups, health insurance schemes, and outcome measures (29, 30, 41). The effectiveness of MHIS interventions with respect to population coverage and financial risk protection was demonstrated through the synthesis of quantitative evidence in the included studies (52). Qualitative evidence generated from synthesised data provides answers to the questions of why the MHIS scheme works or does not work in various settings as well as how the schemes work. Answers to questions in the review that are related to meanings, concepts, descriptions and definitions were provided by the synthesised qualitative evidence (53, 54).

Thus, findings from the included studies were synthesised via the narrative synthesis approach (41, 55-58). The reviewers used narrative synthesis to answer the review questions, using texts, numbers and tables to explore, summarise, and explain the findings as well as the relationship between the findings and evidence obtained within and between the included studies (55, 59).

The lead reviewer utilised NVivo 14, a qualitative data analysis software, to analyse the extracted qualitative data and generate codes and themes, which were used to explore the relationships within (intra) and between (inter) the studies being reviewed. The first step in the iterative narrative synthesis process was the development of a preliminary synthesis by the lead author, after which the reviewers explored the relationships within (intra) and between (inter) the studies being reviewed.

Finally, there was an assessment of the robustness and validity of the synthesised product in answering the review questions through validity assessment and critical reflection on the synthesis process (55, 57, 59).

To better understand the impact of structural determinants on UHC, researchers have further explored how macro- and socioeconomic factors, such as gross domestic product (GDP) and national poverty levels, correlate with population coverage on the MHIS. Data on national poverty and GDP were obtained from the World Bank Open Data Platform on GDP (60), and the percentage of the population living in extreme poverty was <$3/day (61, 62). Two statistical tests were conducted, i.e., Pearson correlation (for the strength and direction of the relationship) and linear regression (to determine if population coverage can be predicted by GDP and poverty).

3. RESULTS

3.1 Study Selection

Figure 1 shows the PRISMA flow chart, summarising the study selection process. A total of 9,738 references were exported onto EndNote 20 from the databases for the seven-pass process of deduplication (46). Following deduplication, 6,162 references were exported to Rayyan.ai for screening, and 6,018 of these were excluded via title and abstract screening, leaving 144 articles for full-text review. During the full-text review of the 144 articles, 47 were rejected because they were not conducted in LMICs, 33 were excluded because they were not MHI studies, 27 studies were excluded because they did not report population coverage, financial risk protection, or service coverage (incorrect outcome), and 1 was excluded because it was a duplicate. Only 36 articles met all the inclusion and exclusion criteria and were thus included in the study. The reviewers identified four additional articles for inclusion via a citation pearl search; thus, a total of 40 articles were included for data extraction in the study (38, 55, 63).

3.2 Characteristics of the Included Studies

3.21 Authorship of the Included Papers

The number of authors in each article varied from a single author to 13 authors. Only two papers had a single author, four papers had two authors, 15 papers had three to five authors, 17 papers had between five and 12 authors, and only one article had 13 authors.

3.22 Study Designs

Thirteen studies were cross-sectional in design, eight systematic reviews, four literature reviews, four case studies, three comparative studies, two each for narrative reviews, document/policy analysis, retrospective policy analysis, and one each for commentary, quasiexperimental study. Most of the papers were mixed methods studies (32), while four were qualitative studies and four were quantitative studies.

3.23 Methodological quality

On the basis of the scoring thresholds used in a previous scoping review by Arbor-Nicitopoulos et al., the reviewers categorised the included studies into three quality tiers (65):

1. High Quality: Studies scoring above 80% (n=21)
2. Moderate Quality: Studies scoring between 60% and 80% (n=18)
3. Low Quality: Studies scoring below 60% (n=1)

All forty studies included in the review relied primarily on secondary data sources, including government health policy documents, strategic plans, health financing policy documents, Universal Health Coverage (UHC) policy documents, published and unpublished literature, media reports, and National Health Accounts reports. Only four studies incorporated primary data collection, predominantly through key

informant interviews with technical and policy staff, healthcare providers, policy experts, academics, and representatives of international organisations.

Overall, the methodological quality of the included studies was relatively high, 52.5% of the studies were high quality, and 45% were moderate quality (see Figure 2 below). All the studies clearly articulated their research aims and objectives. However, most studies provided limited or unclear descriptions of their theoretical or conceptual underpinnings. Studies that received moderate quality scores were characterised primarily by insufficient reporting of the data analysis process, particularly a lack of transparency regarding analytical methods and procedures. These limitations underscore important areas for improvement in future studies.

3.24 Low- and middle-income countries (LMICs) covered

The studies covered 54 LMICs, with 60% being multicountry studies reporting and comparing health insurance data across several LMICs. Approximately 30 of the studies were conducted in countries outside SSA. Approximately 72.5% were published between 2018 and 2022 (< 5 years old), whereas 27.5% were published between 2011 and 2017 (see Table 4 for the list of countries and the number of studies conducted in them).

3.25 Types of compulsory health insurance assessed

Approximately 80% of all the included papers assessed compulsory National Health Insurance schemes. Others were mandatory health insurance schemes under different names, including public health insurance (10%), social health insurance schemes (5%), and general health insurance (2.5%). Owing to its nationwide mandatory enrolment structure, the Community-Based Health Insurance Scheme from Rwanda was also analysed as a compulsory health insurance scheme.

3.26 Financing arrangements

The major sources of funding reported are premium contributions, government revenue allocation, taxation, and foreign donors. Barasa et al. (2021) reported similar funding arrangements for health insurance schemes in several SSA countries. However, a few countries, such as Benin, included taxes on tobacco and alcohol; Gabon included a 10% tax on mobile phones and a compulsory levy (25). In other LMICs, such as Bolivia, Chile, Colombia, Costa Rica, the Dominican Republic, Mexico, Peru, Turkey, and Uruguay, the funding sources are similar, but countries such as Indonesia include a tobacco tax (19, 66, 67). To promote affordability and equity, most of the schemes reported the availability of government subsidies in various forms on compulsory health insurance schemes.

Table 4: List of Countries in the Included Studies and their Frequencies

No.	Non-SSA Country	Freq	SSA Country	Freq
1	China	16	Ghana	12
2	Vietnam	9	Kenya	9
3	Indonesia	8	Nigeria	8
4	India	7	Tanzania	8
5	Philippines	6	Rwanda	7
6	Cambodia	4	Ethiopia	7
7	Peru	4	South Africa	3
8	Colombia	3	Mali	3
9	Georgia	3	Burkina Faso	3
10	Turkey	2	Zambia	2
11	Mongolia	1	Senegal	2
12	Bulgaria	1	Malawi	2
13	Lithuania	1	Gabon	2
14	Montenegro	1	Benin	2
15	Republic of Moldova	1	Zimbabwe	1
16	Romania	1	Uganda	1
17	Russia Federation	1	Togo	1
18	Serbia	1	Sierra Leone	1
19	Albania	1	Sao Tome and Principe	1
20	Bosnia & Herzegovina	1	Liberia	1
21	Kyrgyzstan	1	Gambia	1
22	TFYR Macedonia	1	Djibouti	1
23	Brunei	1	Cote d'Ivoire	1
24	Morocco	1	Sudan	1
25	Myanmar	1		
26	Singapore	1		
27	Uruguay	1		
28	Lao PDR	1		

29	Iran	1
30	Malasia	1

3.3 Effects of Health Insurance on the Three UHC Outcomes of Interest

3.31 Level of Population Coverage (Primary Outcome of Interest)

Several LMICs outside SSA reported significant progress towards achieving UHC with very high levels of population coverage. Thailand reported 100% population coverage via 3 public health insurance schemes (84% of the population covered through general taxation) (20, 68). Over 98% (1.37 billion people) have been reported in China (69-74). Iran reported 96% population coverage (75). In the Philippines, the social health insurance scheme (PhilHealth) achieved approximately 90% population coverage, with full government subsidies for all Filipinos through the government budget and “Sin Tax” (76).

Other LMICs also reported very high levels of population coverage, including Brunei, Malaysia, and Singapore, which all reported over 90% population coverage (19); Costa Rica reported 88% (21); Indonesia reported a population coverage of 63% in 2012 (28) and 81% in 2021, making it the largest single-payer scheme in the world, with 203 million of the 262 million people covered (77, 78); 87% of the population coverage was reported in Peru (79); and 63% of the population was reported as covered in Indonesia, with 67% in Vietnam (80).

A study by Mathauer et al. (2016) in 11 LMICs within the WHO European Region with social health insurance schemes funded through payroll taxes and budget transfers from the government revealed that different countries had achieved various levels of population coverage: Montenegro (96%), Turkey (95%), Serbia (93%), Georgia (91%), Romania (90%), Kyrgyzstan (87.5%), the former Yugoslav Republic of Macedonia (TFYR Macedonia) (85%), the Republic of Moldova (80%), Bulgaria (77%), Bosnia & Herzegovina (65% - 83% (depending on part of the country), and Albania (<50%) (81).

A similar study was conducted on eight LMICs in Latin America, where social health insurance schemes were funded by payroll taxes and budget transfers (subsidies) for the informal sector and vulnerable populations. The level of population coverage recorded for each country was Costa Rica (98%), Mexico (98%), Colombia (96%), Uruguay (95%), Chile (94%), Peru (72%), the Dominican Republic (69%) and Bolivia (43%) (67).

Thirty-eight (92.7%) of the 40 included studies reported the level of population coverage of compulsory health insurance schemes in various LMICs. Seventeen of the 38 studies (44.7%) reported multiple countries, and 10 of the studies (26.3%) were in SSA countries. Barasa et al. (2021) reported population coverage of mandatory health insurance schemes in SSA countries, including Rwanda, where their unique CBHI scheme is managed by the National Government and hence more suitably classified as a National/Public Health Insurance Scheme. The population coverage reported on the schemes in SSA countries was as follows: Rwanda, 88%; Ghana, 57.7%; Kenya, 15.9%; Namibia, 5%; Niger, 2.1%; Cote

d'Ivoire, 1.7%; Liberia, 1.7%; Mali, 1.6%; Tanzania, 1.6%; Madagascar, 1.2%; Ethiopia, 0.8%; Sao Tome & Principe, 0.7%; Burkina Faso, 0.6%; Cameroon, 0.6%; Nigeria, 0.6%; Senegal, 0.6%; Sierra Leone, 0.5%; Comoros, 0.4%; Congo, 0.3%; Zimbabwe, 0.3%; Guinea, 0.2%; Togo, 0.2%; Benin, 0.1%; Chad, 0.1%; CDR, 0.04%; Zambia, 0.03%; and Uganda, 0.0% (25). Eighty-seven percent population coverage was reported in Tunisia (82).

3.32 Financial risk protection (secondary outcome)

The review revealed mixed evidence of financial risk protection, even where government revenue transfers (subsidies) exist and where a high level of insurance coverage has been achieved. In a 2022 systematic review on the effect of the NHIS on financial risk protection in Ghana and Nigeria, 5 of the 9 studies reported a positive impact on catastrophic health expenditure (CHE), whereas 7 studies reported that the proportion of households reporting CHE was significantly lower in insured households than in uninsured households (83). Cashin and Dossou (2021) analysed OOP payments for healthcare in 8 SSA countries with functional NHISs and reported rather high OOP rates. Nigeria had the highest OOP at 77%, followed by Kenya at 47%, Benin at 45%, Ghana at 38%, Tanzania and Zambia at 24%, Gabon at 23%, and Rwanda at 11% (84). In another study by Fenny et al. (2021), OOP health expenditures in Ghana were reported to be 40%, 24% in Kenya and Tanzania, and 6.2% in Rwanda.

Similarly, a systematic review by Erlangga et al. (2019) revealed that it is difficult to determine the impact of the NHIS on financial risk protection. In their review, 34 of the 46 studies reported on OOP expenditure; of these, 17 studies reported a reduction in OOP expenditure, 15 found no statistically significant effect of the NHIS on OOP expenditure, whereas two studies reported an increase in OOP expenditure. Fourteen of the studies also reported on CHE as a measure of financial risk protection, nine reported a reduction in the risk of CHE, three reported no statistically significant effect on CHE, and two reported an increase in CHE (85).

A study comparing CHE and impoverishment from health expenditures among households in China and Vietnam revealed 14.1% and 7% CHE and 2.3% and 1.7% impoverishment from health expenditures, respectively (70). An assessment of government-subsidised contributory social health insurance schemes across 8 countries from the WHO Southeast Asia and Western Pacific Regions, conducted by Vilcu et al. (2016), suggested that most beneficiaries still incur considerable OOP expenditures. All the beneficiaries in the Philippines experienced a reduction in OOP payments; beneficiaries in Thailand and Cambodia experienced a 35% decrease in OOP; China, Vietnam and Indonesia recorded minimal reductions in OOP payments; and beneficiaries in India reported no change in the incidence of CHE (86).

A similar study conducted in eight Latin American countries reported decreases in OOP payments in Bolivia (6%), Chile (6.4%), Colombia (23%), the Dominican Republic (24%), Mexico (9%) and Peru (7%), whereas the OOP payments in Costa Rica and Uruguay increased by 4% and 3%, respectively (67). Other countries, such as Thailand, showed a steady decline in CHE from 6% in 1996 to 2% in 2015 (at a 10% threshold), and the incidence of impoverishment from healthcare expenditure declined from 1.4% in 1996 to 0.3% in 2015 (68). In 2016, a population coverage of 87% reported 2.9% CHE and 2%

impoverishment from health spending (79). Indonesia, with 78% population coverage (203 million enrollees on a single-payer scheme), reported a 48.3% OOP expense (77).

3.33 Service Coverage - Benefit Package (Secondary Outcome)

The scope of services and the types of providers that enrollees can access vary across countries. The comprehensiveness of the benefit package has a direct effect on the rate of utilisation and financial risk protection in the scheme (86). A relatively comprehensive package covering outpatient and inpatient care, with reimbursement for pharmaceuticals on the county's essential drug list, was found to reduce catastrophic expenditures and increase utilisation rates in some countries, including India, Indonesia, Thailand, and Vietnam. Narrow packages covering only inpatient care were found to be less successful in providing financial risk protection (86).

3.4 Relationships among health insurance coverage, GDP and the poverty index

Researchers have explored the associations between economic performance (GDP), national poverty levels, and population coverage on the MHIS. To elucidate this relationship, the reviewers performed a Pearson correlation test and linear regression on national poverty (people living on <$3/day) and GDP data obtained from the World Bank (60-62).

A summary of the results on these outcomes of interest can be found in Table 5 (non-SSA countries) and Table 6 (SSA countries) in the Appendix.

3.41 GDP vs Health Insurance Coverage

Tables 7–11 below present data on the gross domestic product (GDP) and poverty index (obtained from the World Bank Open Data Platform on GDP and national poverty levels) across LMICs in Asia, Europe and Central Asia; Latin America and the Caribbean, Middle East and North Africa, Southeast Asia, and SSA; and the level of population coverage on the MHIS from the included studies (60-62).

Table 7: GDP, poverty index and population coverage - Europe and Central Asia

Country	Population Coverage	GDP Per Capita (USD) – WB 2024	Poverty Index - % Pop on <$3/day (2017 - 2024)
Georgia	91%	28,285.1	4.23%
Turkey	95%	45,122.9	0.53%
Bulgaria	77%	41,519.5	1.01%
Lithuania	96%	54,409.8	1.1%
Montenegro	96%	34,225.9	2.49%
Republic of Moldova	80%	18,615.0	0.13%
Romania	90%	48,731.3	0.70%
Serbia	93%	32,233.8	2.04%
Albania	<50%	26,693.2	0.34%
Bosnia & Herzegovina	65% - 83%	22,955.8	0.24%
North Macedonia	85%	26,536.0	3.94%

Table 8: GDP, poverty index and population coverage - Asia

Country	Population Coverage	GDP Per Capita (USD) – WB 2024	Poverty Index - % Pop on <$3/day (2017 - 2024)
China	97.5%	27,104.9	0%
Viet Nam	76%	16,385.5	1.66%
Indonesia	81%	16,448.3	5.44%
India	25%	11,160.0	5.25%
Philippines	90%	11,794.1	11.53%
Cambodia	27%	7,966.9	NA
Mongolia	100%		0.44%
Kyrgyz Republic	87.5%	19,144.7	2.74%
Myanmar	<25%	5,997.5	10.27%
Lao PDR	<25%	9,775.8	14.09%
Malaysia	>90%	38,779.3	0.01%
Iran	96%	19,873.9	2.17%
Thailand	100%	24,712.1	0%
Pakistan	51%	6,252.1	14.35%

Table 9: GDP, poverty index and population coverage – Latin America and the Caribbean

Country	Population Coverage	GDP Per Capita (USD) – WB 2024	Poverty Index - % Pop on <$3/day (2017 - 2024)
Peru	87%	17,802.4	5.14%
Colombia	96%	21,508.8	7.69%
Uruguay	95%	36,417.9	0.17%
Bolivia	43%	12,877.6	2.82%
Mexico	98%	25,738.6	2.33%
Costa Rica	98%	30,062.8	1.28%
Dominican Republic	69%	27,541.7	0.78%
Chile	94%	34,637.1	0.52%

Table 10: GDP, poverty index and population coverage - Middle East and North Africa (MENA)

Country	Population Coverage	GDP Per Capita (USD) – WB 2024	Poverty Index - % Pop on <$3/day (2017 - 2024)
Morocco		10,415.1	3.68%
Algeria	87%	17,620.7	0%
Tunisia	85%	14,510.0	0.65%

Table 11: GDP, poverty index and population coverage - SSA

Country	% Population Coverage (Any Insurance)	GDP Per Capita (USD) – WB 2024	Poverty Index - % Pop on <$3/day (2017 - 2024)
Ghana	58.2%	8,020.0	39.03%
Kenya	19.9%	6,644.1	46.88%
Nigeria	<5%	9,086.9	41.82%
Tanzania	17%	4,220.8	51.35%
Rwanda	88%	3,710.9	38.55%
Ethiopia	5.9%	3,287.5	38.64%
Mali	5.6%	3,314.8	36.1%
Burkina Faso	0.9%	2,895.9	42.06%
Senegal	6.9%	5,070.6	17.89%
Gabon	45%	21,510.2	3.81%
Benin	8%	4,434.6	27.22%
Zimbabwe	11.6%	5,928.1	49.22%
Togo	5.8%	3,365.5	34.42%
Sierra Leone	1.5%	3,522.3	41.49%
Liberia	5.3%	1,871.0	33.56%
Cote d'Ivoire	4.6%	7,669.2	20.90%
Niger	2.03%	2,049.9	60.49%
Namibia	18.8%	11,686.6	22.86%
Mozambique	2.7%	1,705.4	81.36%
Burundi	32%	1,194.9	74.20%
Zambia	2.54%	4,214.9	71.66%

In Table 12, the regression summary of the ordinary least squares (OLS) regression results on the relationship between GDP and health insurance coverage shows a strong and statistically significant linear association (Pearson correlation (r) = 0.772; P value = 0.00000). Table 13 also shows a positive and statistically significant regression coefficient for GDP ($\beta = 2.156 \times 10^{-5}$, $p < 0.001$). The results of the diagnostic tests in Table 14 suggest no significant deviation from normality in the residual distribution, Jarque-Bera test (p = 0.230) or Omnibus test (p = 0.084).

Table 12: Model Summary (OLS Regression)

Statistic	Value
Dependent Variable	Health Insurance Coverage
Model	Ordinary Least Squares (OLS)
Number of Observations	49
Degrees of Freedom (Model)	1
Degrees of Freedom (Residual)	47
R-squared (R^2)	0.595
Adjusted R^2	0.587
F-statistic	69.17
Prob (F-statistic)	8.60×10^{-11}
Log-Likelihood	-0.303
AIC	4.606
BIC	8.390
Covariance Type	Nonrobust

Table 13: Regression coefficients (GDP and health insurance coverage)

Variable	Coefficient (β)	Std. Error	t value	p value	95% CI Lower	95% CI Upper
Constant	0.1892	0.057	3.337	0.002	0.075	0.303
GDP per Capita	2.156×10^{-5}	2.59×10^{-6}	8.317	<0.001	1.63×10^{-5}	2.68×10^{-5}

Table 14: Diagnostic statistics

Diagnostic Test	Value
Omnibus	4.954
Prob (Omnibus)	0.084
Jarque-Bera	2.943
Prob (JB)	0.230
Skewness	0.395
Kurtosis	2.096
Durbin-Watson	1.305
Condition Number	3.49×10^4

The model explains approximately 59.5% of all cross-country variation ($R^2 = 0.595$), and the overall model fit was robust ($F = 69.17$, $p < 0.001$).

3.42 Poverty index vs population coverage

Table 15 presents the regression summary of the ordinary least squares (OLS) regression results on the relationship between the poverty index and health insurance coverage, revealing a strong and statistically significant linear relationship (Pearson correlation (r) = 0.765; P value = 0.00000). As shown in Table 16, there is a negative and statistically significant coefficient for GDP ($\beta = -1.292$, $p < 0.001$). The results of the diagnostic tests in Table 17 suggest that the regression assumptions are satisfied, as the Jarque–Bera test ($p = 0.526$) and Omnibus test ($p = 0.531$) indicate no significant deviation of the residuals from normality.

Table 15: Model Summary OLS Regression

Statistic	Value
Dependent Variable	Health Insurance Coverage
Model	Ordinary Least Squares (OLS)
Number of Observations	48
Degrees of Freedom (Model)	1
Degrees of Freedom (Residual)	46
R-squared (R^2)	0.586
Adjusted R^2	0.577
F-statistic	65.01
Prob (F-statistic)	2.39×10^{-10}
Log-Likelihood	-1.223
AIC	6.447
BIC	10.19
Covariance Type	Nonrobust

Table 16: Regression Coefficient (Poverty Index – Health Insurance Coverage)

Variable	Coefficient (β)	Std. Error	t value	p value	95% CI Lower	95% CI Upper
Constant	0.8094	0.048	16.999	<0.001	0.714	0.905
Poverty Index	-1.2920	0.160	-8.063	<0.001	-1.615	-0.969

Table 17: Diagnostic statistics

Diagnostic Test	Value
Omnibus	1.265
Prob (Omnibus)	0.531
Jarque-Bera	1.284
Prob (JB)	0.526
Skewness	-0.328
Kurtosis	2.539
Durbin-Watson	1.393
Condition Number	4.54

The model explains approximately 58.6% of all cross-country variation (R^2 = 0.586), and the overall model fit was robust (F = 65.01, p <0.001), confirming that the poverty index is a strong predictor of health insurance coverage.

4. DISCUSSIONS

In this systematic review, we evaluated the effectiveness of implementing mandatory health insurance schemes in addressing health financing challenges and achieving UHC across LMICs, especially SSA countries. The reviewers focused on the level of population coverage, financial risk protection and services coverage for assessing the effectiveness and success of health insurance schemes. In alignment with the focus of UHC, population coverage was the primary outcome indicator of interest in this review, whereas financial risk protection and services coverage were identified as secondary outcomes (32, 87).

Revenue generation for health insurance schemes occurs through a combination of public and private sources, including premium contributions, payroll taxes, general taxes, earmarked taxes, government revenues (budget transfers), out-of-pocket payments and donor funds. By design, the financing mechanism in all the countries reviewed in the studies entails the provision of subsidies for poor and vulnerable populations by the government. There are limitations in the ability of populations to afford the payment of insurance premiums and the importance of government revenue for expanding population coverage (informal sector workers and vulnerable populations), improving benefit packages, and enhancing financial protection (75, 88).

Most of the countries reviewed in the included papers implemented government-managed NHISs targeting the entire population of the country. The scheme pools the health risks and financial contributions of individuals, households, employers, employees, and the government to fund healthcare (89). Ifeagwu et al. (2021) argued that mandatory NHI schemes provide the best option for equitable healthcare delivery, voluntary schemes can worsen health disparities and inequities (90). However,

studies have questioned the suitability and sustainability of SHI in LMICs, especially in SSA, where the majority of the population is in the informal sector (91).

The mandatory health insurance schemes in LMICs with significant progress towards UHC were characterised by the availability of government revenue to provide subsidies for the scheme or enrolment of poor/vulnerable populations; a unified health insurance system with similar comprehensive benefits for all; avoidance of fragmentation; enabling a policy environment; strategic purchasing arrangements (to achieve economies of scale); enforcement of laws supporting compulsory health insurance with penalties for defaulters; strong political and commitment of government to UHC; and decentralisation of insurance programs (20, 70, 72, 78, 82).

In this review, barriers to the success of NHI schemes in lagging LMICs include inadequate funding resulting from weak taxation systems and nonprioritisation of health in the government budget; unsustainable financing of schemes; fragmented risk and fund pools; poor healthcare systems; socioeconomic problems, including high unemployment rates and high informal sector populations; low enrolment rates and high dropout rates; and widespread poverty and inequitable income distributions (20, 78, 88, 92–98). None of the countries with successful or lagging schemes shared identical patterns of facilitators and barriers to achieving UHC, and each country had a unique pattern (28).

According to Umeh (2018), improving government revenue through income and general tax collection may be difficult in SSA because of the high informal sector population and high poverty levels. LMICs in SSA need to explore new and innovative revenue sources, including the introduction of consumption taxes such as VATs (e.g., Ghana), mobile phone taxes (e.g., Gabon), and alcohol and tobacco taxes (sin taxes) (e.g., the Philippines) (95).

The results of the review show that population coverage was the most frequently reported outcome indicator; 38 of the 40 included studies (95%) reported population coverage of health insurance schemes; 20 studies (50%) reported financial risk protection; and only 16 studies (40%) reported service coverage. Population coverage is a crucial fundamental indicator for assessing the effectiveness of health insurance schemes and the progress of health systems in achieving UHC (99, 100).

LMICs operating mandatory health insurance schemes with 80% population coverage or higher include Algeria (87%), Brunie (90%), Chile (94%), China (97.5%), Colombia (96%), Costa Rica (98%), Indonesia (81%), Iran (96%), Kyrgyzstan (87.5%), Malaysia (90%), Mexico (98%), Mongolia (100%), Montenegro (96%), the Republic of Moldova (80%), Serbia (93%), Singapore (90%), the Philippines (90%), Peru (87%), Rwanda (88%), Thailand (near 100%), Tunisia (85%), TYFR Macedonia (85%), Uruguay (95%) and Vietnam (> 80%). The NHIS in Iran achieved 96% population coverage through the Free Universal Health Coverage Fund, which expanded coverage to over 11 million uninsured Iranian people, mostly informal sector workers (75).

Indonesia, with 81% population coverage and the largest single-payer scheme in the world (over 203 million people), achieved rapid progress towards UHC in its NHIS by implementing an innovative,

adaptive, and evidence-based centralised one-size-fits-all scheme with a comprehensive benefits package (77). The NHI scheme was optimised by setting up UHC agencies, reducing fragmentation by pooling revenues, and providing tools for advancing strategic purchasing goals, such as economies of scale (resulting in lower costs), prospective and budget-neutral provider payments, integrated information systems, and integrated information systems. They also implemented cost-effective interventions and aligned benefit packages with their national health strategies (78).

A unified health insurance system with a similar benefit package for all is an equitable health financing mechanism that provides equitable and efficient healthcare access (88). Evidence from Mexico and Thailand (with 98% and 100% population coverage, respectively) suggests that subsidies and greater reliance on public funding from government revenues will help accelerate the achievement of UHC and bridge the health access gap between the rich and the poor (98).

The mandatory health insurance scheme in Peru, with 87% population coverage, includes an Essential Health Benefits Package (EHBF) financed by government taxes and premium contributions through three health insurance schemes (subsidised, semicontributory and contributory) with the intent of population coverage (79). Vietnam, a country with a high proportion of informal sector workers, achieved > 80% population coverage by implementing a pro-poor scheme designed to prioritise service coverage. The scheme achieved an incremental increase in compulsory health insurance coverage by prioritising the enrolment of poor and vulnerable populations, paying their premiums and providing financial support to cover their travel expenses to higher-level providers via government subsidies channelled through the Health Care Fund for the Poor (HCFP) (70).

In China, implementing a fragmented SHI scheme has negatively impacted its impressive progress towards UHC (69). Massive migration complicates multiple schemes, making portability difficult and resulting in barriers to access. Many individuals are also enrolled in more than one scheme, causing inefficient use of government investment in subsidies and difficulty in managing moral hazard and adverse selection (69).

In SSA, only three countries have NHI schemes that have achieved over 40% population coverage (Rwanda, > 80%; Ghana, 57.7%; and Gabon, 40.8%). Their schemes do not rely on premium contributions but rather on other sources of funding to subsidise their schemes, including taxes (general and earmarked), government revenue, and donor money ((25, 84). In Nigeria, after almost two decades of the NHI program, less than 5% of the population has health insurance coverage. This abysmal coverage is symptomatic of deeper structural issues, including a large informal sector, a high level of poverty, fragmented insurance schemes, nonprioritisation of health in government budget allocations and poor political will to achieve UHC (25, 93).

Tangcharoensathien et al. (2020) reported that Thailand's NHIS offered a high level of financial risk protection to its enrollees. They reported a decrease in catastrophic health spending from 6% in 1996 to 2% in 2015, and the incidence of healthcare impoverishment decreased from 2.2% in 1996 to approximately 0.3% in 2015. The authors concluded that this was achieved through a successful UHC

campaign that entailed a comprehensive benefits package, including high-cost interventions, elimination of copayment at the point of care and strategic purchasing that contributed to cost containment and efficiency in the health system (68). Xu et al. (2007), in their seminal work, which reviewed 116 household surveys from 89 countries, revealed that MHIS has the capacity to significantly protect households from catastrophic health spending (101)

Strong political will and evidence-based contextualised healthcare financing policies are critical for achieving UHC. Countries with the greatest progress towards UHC through the NHIS typically have evidence of strong political will and commitment to UHC from their government (78). McIntyre et al. (2013), in their case studies on factors enabling or hindering progress towards UHC in 7 LMICs, identified policy processes as key factors. They emphasised the need for rigorous attention to detail during both policy formulation and implementation (102).

The regression analysis revealed a significant and strongly positive relationship between GDP and health insurance coverage, highlighting the role of fiscal capacity in enabling countries to expand health insurance coverage for UHC. Several macrofiscal and health financing studies across LMICs have demonstrated that higher levels of GDP are associated with greater fiscal space for healthcare financing through government/prepaid financing mechanisms, positively driving a reduction in OOP for health expenditures and the achievement of UHC (103–108). A meta-analysis by Fan et al. (2024) revealed a strongly positive correlation between economic performance and health insurance coverage in both developed and developing countries (109).

A study across 151 countries demonstrated that as countries achieve economic growth and higher income, they typically have greater fiscal space that drives expanded public health financing (110). A Lancet study across 195 countries and territories reported a systematic association between economic growth and increased government health budgets, with a decreasing OOP share of total health expenditure (THE) (111) This expanded financing can increase premium subsidies, insurance coverage for vulnerable populations, strengthen risk pooling arrangements and deepen benefit packages.

In contrast, the analysis revealed a strong negative association between poverty level and health insurance coverage. This finding is consistent with evidence from several studies across LMICs, which demonstrate that higher poverty levels are linked to lower enrolment in social health insurance schemes. A systematic review and meta-analysis by Afriyie et al. (2022) revealed that, within LMICs, households from the wealthiest group have 61% greater odds of being enrolled in health insurance than those from the poorest group do (112). According to several studies, this is attributed to persistent structural barriers faced by poorer populations and households, who lack financial means, stable income or institutional access to insurance schemes (25, 112–115).

These two associations underscore the significant importance of socioeconomic factors in the success of MHIS, suggesting that the achievement of equitable progress towards achieving UHC goals requires economic growth and targeted financial protection policies that are pro-poor by design.

5. CONCLUSIONS

Insights from several countries with successful NHI schemes, including Indonesia, Mexico, Peru, Thailand, and even Rwanda and Ghana (in SSA), reveal that strategic policy design, strong political will and context-specific financing models are essential elements for achieving expanded population coverage and financial risk protection. Overall, the success of NHI schemes is strongly dependent on the capacity of countries to successfully address several complex and multifaceted factors, including political commitment, sound institutional frameworks, strategic policy designs, and sustainable financing mechanisms.

Macroeconomic conditions also play a critical role in shaping how MHISs can help drive trajectories towards UHC. Economic prosperity enhances fiscal space expansion, which typically enables the expansion of risk pooling mechanisms, the introduction of subsidies and the strengthened institutional support necessary for successful MHIS. Furthermore, poverty reduction and the introduction of targeted pro-poor policies that address affordability and institutional barriers are essential for ensuring increased coverage of vulnerable groups.

In Nigeria, the NHIA needs to rapidly evolve from passive administration to a vibrant steward of the drive for UHC through policy reforms, including the enforcement of mandatory participation, the development of innovative financing strategies to drive the integration of informal sector workers, and the provision of comprehensive and equitable benefit packages. To succeed, strong political will is not merely desirable but indispensable. To achieve UHC, there is a dire need for the NHIA to consider a paradigm shift in how health insurance is conceptualised, financed, and delivered, especially for the informal sector population. Evidence-based and contextually grounded policies must guide the transformation of Nigeria's health financing system.

6. LIMITATIONS

Several limitations should be considered when interpreting the findings of this systematic review. The included studies varied widely in design, analytical methods, and measurement of key outcomes of interest, which made a formal meta-analysis impossible and required reliance on narrative synthesis. The observational nature of most of the synthesised evidence makes causal inference impossible, and reported associations between economic conditions and insurance coverage may be influenced by unmeasured confounders such as health system capacity, quality of governance and political will. Despite the extraction of GDP and poverty data from standardised World Bank datasets, differences in reporting periods and definitions of indicators from the primary sources may introduce chronological mismatches or measurement inconsistencies. Finally, considering the reliance on country-level aggregate data, it may fail to fully capture within-country inequalities or population subgroups disproportionately affected by poverty or insurance coverage.

7. FURTHER RESEARCH

Further investigations are needed to provide information on the development and implementation of diverse healthcare financing policies, the contextual factors influencing the outcomes, and effective strategies for managing implementation processes to achieve policy objectives and advance progress towards UHC (102).

Future research is needed to broaden the understanding of the unique health financing landscape in Nigeria. These studies should aim to generate information on how to design and implement context-sensitive healthcare financing policies that can scale successful innovations at the national and subnational levels. There is a paucity of research on context-specific willingness to pay (WTP) for social health insurance schemes to guide subsidy design, premium setting, and development of benefit packages at the national and subnational levels in Nigeria.

Declarations

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Figures

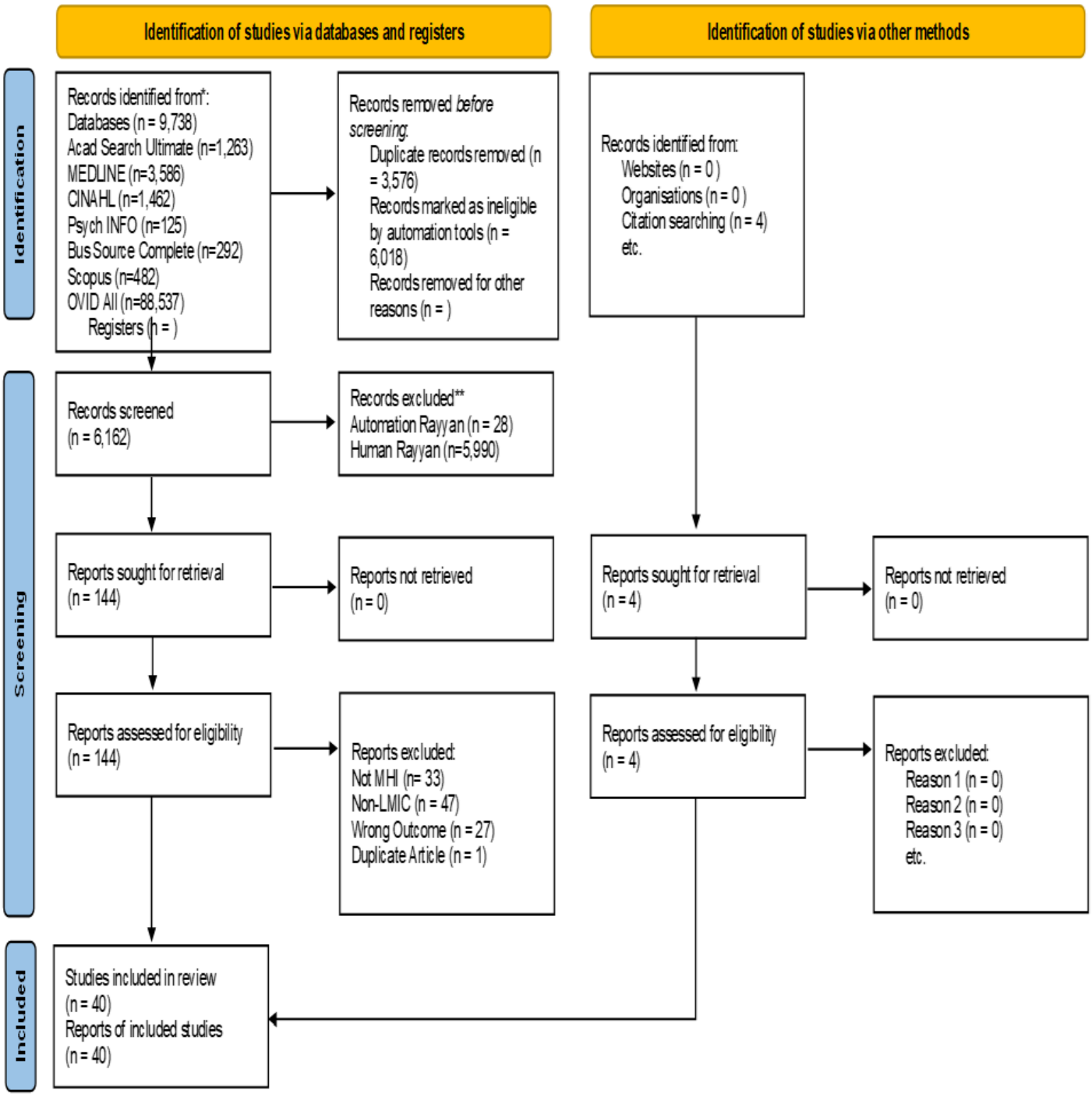

Figure 1

Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flowchart (64)

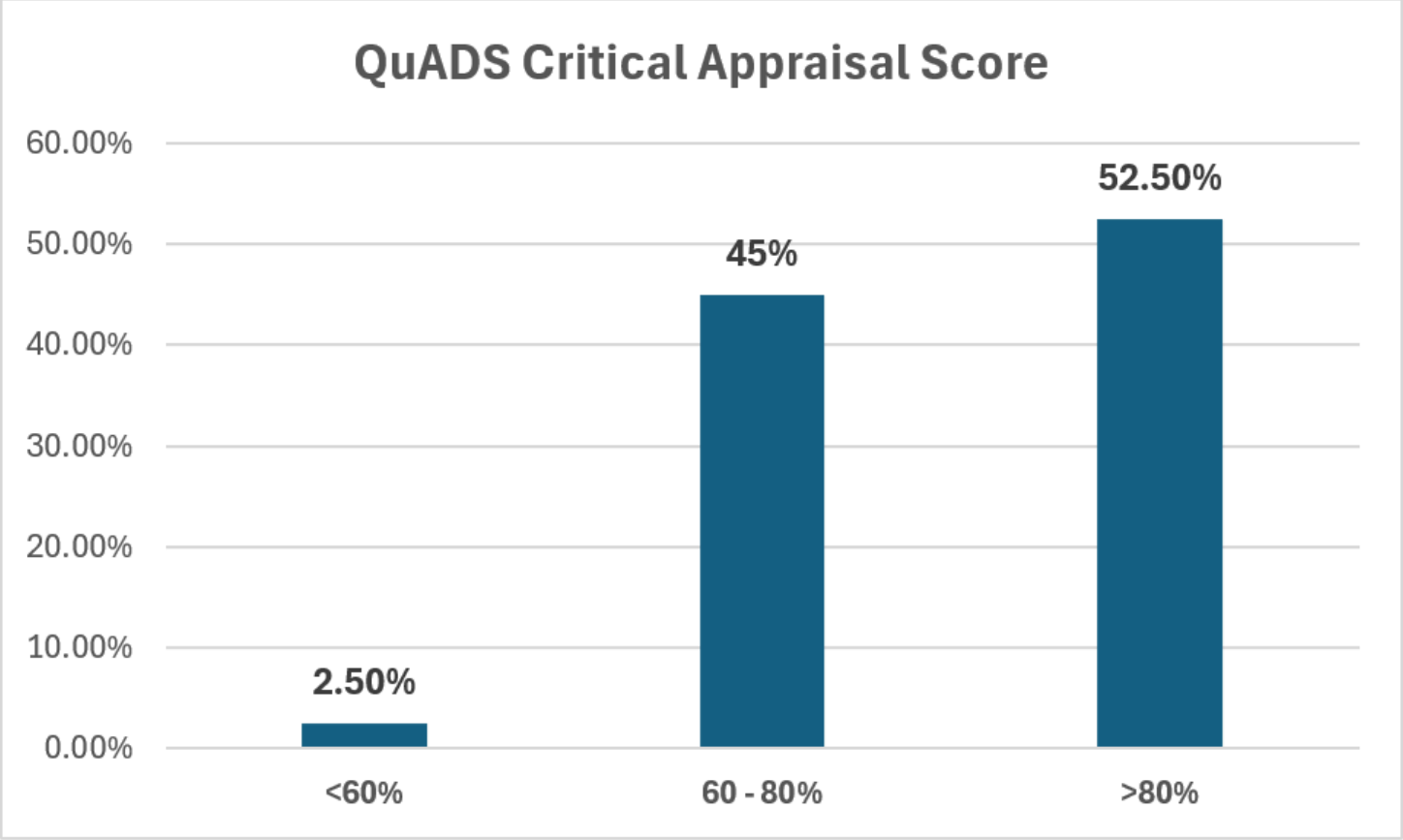

Figure 2

QuADS Methodological Quality Scoresin Percentages

Supplementary Files

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