

BMJ Open Government purchasing initiatives involving private providers in the Eastern Mediterranean Region: a systematic review of impact on health service utilisation

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ABSTRACT

Objective This paper provides a systematic review of evidence of government purchase of health services from private providers through stand-alone contracting-out (CO) initiatives and CO insurance schemes (CO-I) on health service utilisation in Eastern Mediterranean Region (EMR) to inform universal health coverage 2030 strategies.

Design Systematic review.

Data sources Electronic search of published and grey literature on Cochrane Central Register of Controlled Trials, PubMed, CINHAL, Google Scholar and web, including websites of ministries of health from January 2010 to November 2021.

Eligibility criteria Randomised controlled trials, quasi-experimental studies, time series, before–after and endline with comparison group reporting quantitative utilisation of data across 16 low-income and middle-income states of EMR. Search was limited to publications in English or English translation.

Data extraction and synthesis We planned for meta-analysis, but due to limited data and heterogeneous outcomes, descriptive analysis was performed.

Results Several initiatives were identified but only 128 studies were eligible for full-text screening and 17 met the inclusion criteria. These included CO (n=9), CO-I (n=3) and a combination of both (n=5) across seven countries. Eight studies assessed interventions at national level and nine at subnational level. Seven studies reported on purchasing arrangements with non-governmental organisations, 10 on private hospitals and clinics. Impact on outpatient curative care utilisation was seen in both CO and CO-I, positive evidence of improved maternity care service volumes was seen mainly from CO interventions and less reported from CO-I, whereas data on child health service volume was only available for CO and indicated negative impact on service volumes. The studies also suggest pro-poor effect for CO initiatives, whereas there was scarce data for CO-I.

Conclusion Purchasing involving stand-alone CO and CO-I interventions in EMR positively impact general curative care utilisation, but lacks conclusive evidence for other services. Policy attention is needed for embedded evaluations within programmes, standardised outcome metrics and disaggregated utilisation data.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first systematic evaluation of government purchase of health services from private providers in the Eastern Mediterranean Region, through both stand-alone contracting-out measures and contracting-out under insurance.
- ⇒ It shows positive impact on general curative care utilisation of both stand-alone contracting and contracting-out under insurance, whereas stand-alone contracting-out also demonstrates improved utilisation maternity services.
- ⇒ Use of diverse metrics and lack of baselines or comparison groups restrained the meta-analysis.
- ⇒ Data gaps were particularly seen for insurance initiatives, with standardised metrics and more robust evaluation designs required in roll-out of insurance initiatives.

INTRODUCTION

In the Eastern Mediterranean Region (EMR), there has been a steady proliferation of government funded programmes that purchase services to expand access to affordable health services.¹ These domestically driven programmes are largely financed by country governments, have grown incrementally to comprise of small scale to more extensive arrangements and involve private providers to varying extents.

According to WHO, the EMR has a population of 679 million and includes 22 member states from which 6 are high-income countries, 4 are upper-middle-income countries, 7 low-income and middle-income countries (LMICs) and 5 low-income-countries (LIC) (box 1).² The exponential growth of formal private providers in the EMR has helped to fill gaps in the provision of health services particularly where government systems are strained or weakly functional.³ Private providers are a

**Box 1 : Categorization of EMR countries by income I**

- ⇒ High income: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE.
- ⇒ Upper middle income: Iraq, Jordan, Lebanon and Libya.
- ⇒ Lower middle income: Djibouti, Egypt, Islamic Republic of Iran, Morocco, Pakistan, Tunisia and Occupied Palestinian Territory.
- ⇒ Low income: Afghanistan, Somalia, Sudan, Syrian Arab Republic and Yemen.

substantial source of hospital, diagnostic, specialist outpatient and general ambulatory care services in the region. Private providers account for 70%–90% of ambulatory care visits in Pakistan, Somalia, Egypt, Afghanistan and Lebanon, 35%–45% in Yemen, Sudan, Jordan and Iraq, and one-fifth of the visits in the remaining countries.⁴ Private providers are a growing source of inpatient care and the proportion of hospital beds within the private sector varies from 7% to 3%,¹ with higher proportions in Egypt, Lebanon, Jordan and Morocco.⁴

Purchasing arrangements with private providers in the EMR involve government funding to deliver subsidised or free services, based on formal service agreements on scope and duration of services, with some level of oversight by the government. Access to affordable care is key goal for these arrangements, however, private provider purchasing initiatives in the LMIC have grown over the years often without a concerted universal health coverage (UHC) strategy.^{5,6}

A recent landscape analysis has outlined two main private provider purchasing models in the EMR: (1) government stand-alone contracting-out (CO) initiatives with private providers delivering primary, diagnostic and secondary care and (2) CO under government-funded insurance scheme (CO-I) of private hospital/facilities, alongside public sector and parastatal hospitals.⁷ Demand side initiatives such as social franchising, voucher schemes are less commonly seen and are often implemented by non-governmental organisations (NGO) with funding from development partners.⁷

Purchasing from private providers through stand-alone CO and also CO-I interventions have been underway in EMR countries of Egypt,⁸ Iran,⁹ Pakistan,^{10,11} Jordan,¹² CO of private providers under insurance schemes is underway in Lebanon,¹³ Tunisia,¹⁴ Sudan¹⁵ and Morocco,¹⁶ whereas CO as the primary intervention was seen mainly in Afghanistan.¹⁷

The WHO has urged EMR members that purchasing modalities from private providers should be effectively optimised towards UHC.¹⁸ An important starting point would be to gauge evidence from existing government purchasing programmes and identify evidence gaps that need to be addressed. We attempt to fill this knowledge gap by conducting a systematic review to assess the impact of CO and CO-I arrangements on service utilisation. The primary objective is to assess the quantitative impact on healthcare utilisation, with the secondary objective to assess relative impact on service utilisation impact for the

poor. Whereas individual studies of purchasing interventions have been published from EMR countries, a regional impact synthesis has not been conducted and there is generally a dearth of regional reviews addressing EMR's priorities.¹⁹ This synthesis of evidence is intended to serve as a preliminary analysis and supportive evidence for the WHO's regional resolution on private sector engagement for advancing UHC.¹⁸ Our intent is not to judge whether CO is better than usual direct government delivery, but rather to assess whether government managed purchasing interventions have improved healthcare utilisation, consolidating what is known and highlighting evidence gaps for addressing within UHC strategies.

METHODS

We used Preferred Reporting Items for Systematic Reviews and Meta-Analyses methodology for conducting the systematic review.²⁰

Objectives

The objective of this systematic review was to assess government CO interventions involving private providers in terms of impact on health service utilisation. We focused our analysis on purchasing arrangements involving stand-alone CO and CO-I to deliver affordable health services. These arrangements are defined as following:

Types of interventions

We included studies comprising of purchasing arrangements involving CO and contracting under insurance schemes. All studies explicitly mentioned a formal agreement between the government and private providers (eg, private hospitals and clinics, individual family practitioners, private companies and NGOs) to deliver health services. Agreements specified the population, geographical area, time period, amount of government funding (full or co-financing) and management of the purchasing arrangement (with or without explicit targets).

Studies with demand side interventions such as vouchers, social marketing and social franchising were excluded from this review.

Stand-alone CO

CO involves government purchase of health services from private providers under a formal agreement specifying the population group, time period and funds.²¹ Under stand-alone contracting initiatives payment is made for a package of health services, often loosely specified in LMICs.²² Payment is usually made for a package of service, usually through block payments or capitation payments to contracted providers, Beneficiaries are the populations residing in catchments served by the health facilities. CO can take the form of service delivery and management contracts²¹—under service delivery contracts the government funds private providers to deliver services from private health facilities, while under management

contracts private providers are paid to manage government facilities to deliver the required services.²³

CO under insurance

Insurance is a system of financing that uses pooled funds to pay for health services specified by the insurance package by purchasing services from private providers, parastatal or government providers. Funds are managed by a third party insurance provider, beneficiaries are predefined and contracted providers are reimbursed for individual services used at health facilities by defined beneficiaries usually through fixed case rate payments.²⁴

Pooled funds are used to purchase services from private health providers in addition to public health providers for a defined service package, defined beneficiaries and are managed by the government or an insurer working under the government. The scope of the review included non-universal voluntary insurance schemes as well as universal mandatory health insurance schemes, as long as these were wholly or substantially funded by the government.

Demand side purchasing schemes, such as vouchers,²⁵ social marketing,²⁶ social franchising,²⁷ were excluded from the scope of review.

Private providers

The private health providers are defined as organisations and individuals that are neither owned nor directly controlled by the government and are involved in provision of health services.²⁸ The focus of this review was on CO and CO under insurance interventions that wholly or substantially purchased services from private health providers and included hospitals, clinics, individual private practitioners, private companies and non-profit organisations.

Geographical boundaries

We restricted our study to purchasing programmes operating in LMICs as defined by the World Bank,² in the EMR of the WHO.

Types of outcome measures

Evaluation of at least one of the selected outcomes indicators:

Primary outcomes

- ▶ Service volume at health facilities for either general or specified health services.
- ▶ Service utilisation population based: measured as visits made by individuals to health facilities for either general or specified health services over a given time period.

Secondary outcomes

- ▶ Equitable utilisation of health services: measured as relative disparity in healthcare utilisation by socioeconomic status of individuals; urban–rural residence of individuals; education status of individuals.

Types of studies

The following study designs were considered for inclusion in the review:

- ▶ Randomised controlled trials (RCTs) individual and cluster.
- ▶ Non-randomised quasi experimental studies with clearly defined experimental and comparison groups.
- ▶ Time series studies in which data are derived at least three times points (interrupted time series—ITS).
- ▶ Before-and-after studies with a comparison/controlled before-and-after studies (CBA) to assess the effect of an intervention by comparing the outcomes prior to its use and after.
- ▶ Cross-sectional correlational studies.
- ▶ Endline studies with a control group.

We included studies focusing on clinical, promotive and preventive health services only. Studies on ancillary health services, dental services, commodity only provision were excluded from the analysis.

Time boundaries

We focused on recent data and restricted the search to evaluations published 2010 onwards till November 2021. Search was limited to evaluations published in English or availability of an English translation.

Types of participants

The participants included users and non-users of health facilities participating in CO or CO-I.

Types of outcomes

Primary outcome: health service utilisation

This refers to health service utilisation at population level. It was measured by the number of patient visits and the service volume at health facilities for general and specified services.

Secondary outcomes: equitable utilisation of health services

This refers to the relative disparity in health service utilisation based on individual's socioeconomic background (ie, income, education, urban or rural residence).

Search methods

Published and grey literature was systematically searched to identify evaluations of government purchasing programmes that met definitions for contracting and insurance schemes.^{21 23 24} The search for eligible published studies was made in the following electronic databases: Cochrane Central Register of Controlled Trials in the Cochrane Library; PubMed; CINAHL; Google Scholar. In addition, we manually screened the reference list of included studies and relevant systematic reviews to capture relevant studies that may have not emerged in the electronic search.

The search for grey literature focused on published reports, unpublished reports and documents. A targeted search was conducted on the following databases and websites: World Bank Group, Global Index Medicus, Google web and the official Ministry of Health websites of countries in the EMR.

For inclusion eligibility, the evaluations had to meet the set of inclusion criteria for geography, type of intervention,

study design, study participant, outcome measures. The search covered publications from 2010 up to the date of the final searches in November 2021. Detailed criteria are provided in online supplemental table S1.

Our search strategies comprised a combination of MESH terms and free-text key terms that included “Government”, OR “Government Programs” OR “Public Sector”, AND “Contracting” OR “Contracting-out”, OR “Contracts”, OR “Service contracts”, OR “Primary care contracts”, OR “Hospital Contracts”, “OR “Concessional Arrangement”, OR “Public-Private Partnerships”, “OR “National Health Insurance”, OR “Social Health Insurance” OR “Government Health Insurance” Or “Insurance Program” AND “Private Sector” OR “Private providers” OR “Family Practice” OR “Family Practice Models” AND (Iran OR Jordan OR Kuwait OR Lebanon OR Libya OR Syria OR Tunisia OR Afghanistan OR Djibouti OR Egypt OR Iraq OR Morocco OR Pakistan OR Somalia OR Sudan OR Yemen OR “Eastern Mediterranean Region” OR EMR OR “Mediterranean region” OR Mediterranean). Detailed search strings are provided in online supplemental table S2.

Study identification and extraction

Three reviewers (AA, FS and WJ) independently reviewed the title/abstracts of all identified studies using Covidence software.²⁹ Studies found eligible were further assessed in duplicates using full texts. A senior reviewer (SZ) reviewed all the included studies and resolved any disagreements. A standardised data extraction sheet was used to derive the information by three researchers (AA, FS and WJ) including study design, geographical location, description and scale of initiative or scheme, details of type of service and providers, outcome data and study limitations.

Assessment of risk of bias

Two reviewers (JKD and FS) independently assessed the quality and risk of bias of each study. For RCTs, we used the Cochrane Risk of Bias tool,³⁰ to judge as ‘high’, ‘low’, or ‘unclear’ risk of bias for randomisation, allocation concealment, blinding of participants, personnel and outcome assessors, incomplete outcome data, selective reporting and other biases. For non RCTs, we used the Cochrane Effective Practice and Organisation of Care criteria,³¹ and studies were judged as ‘high’, ‘low’ or ‘unclear’ risk of bias for allocation sequence generation, allocation concealment, baseline outcome measurements, baseline characteristics, prevention of knowledge in allocated interventions, contamination, selective reporting and other biases.

Data analysis

Key characteristics of included studies were described in terms of the scale of implementation, beneficiaries and service providers. SZ, AA, WJ and FS narratively synthesised information on maternal and reproductive health, child health, outpatient and inpatient visits, and relative

utilisation by disadvantaged groups and this was done in duplicate. For studies that reported outcomes of service utilisation in percentages (%); percentage difference was determined between preintervention and postintervention, and between intervention and control group by calculating the absolute value of difference between the percentages; whereas studies with results in means and SD, the mean difference (MD) was reported. Due to variation in reported outcomes and outcome measures, a meta-analysis could not be performed.

Patient and public involvement

There was no patient and public involvement in our study.

RESULTS

We identified a total of 8197 deduplicate studies (8091 studies in published literature; 106 studies in the grey literature) through a comprehensive database search. Full texts of 128 studies were screened for eligibility (116 from published literature and 12 studies from grey literature). We excluded 101 full texts (67 wrong study design, 32 wrong interventions, 1 wrong setting and 1 wrong outcome). Studies that reported on larger health reforms without attributing effects to stand-alone CO or CO-I were excluded. A few evaluations were excluded as they composed of a summary but not the full paper. Finally, a total of 17 studies were included in our analysis (figure 1, online supplemental table S3).

Study designs

Out of 17 studies, 7 were ITS,^{32–38} 4 were endline with comparison,^{39–42} 3e cross-sectional correlational,^{43–45} 2 were CBA^{46–47} and 1e was cluster RCT.⁴⁸ Seven studies were conducted in Iran,^{32–34–39} four in Pakistan,^{33–40–42} three in Afghanistan^{46–48} and one each in Egypt, Tunisia and Jordan^{43–45} (table 1).

Interventions

The 17 studies reported on 11 CO programmes across 7 countries—CO interventions from Iran, Pakistan, Afghanistan (9 studies), CO-I interventions from Egypt, Jordan and Tunisia (4 studies) and combination of CO and CO-I interventions from Iran (4 studies). Eight studies assessed interventions at national level, while nine at subnational level. Seven studies reported on purchasing arrangements involving NGOs, 10 studies on purchasing arrangements involving private hospitals and clinics (table 2).

Outcomes

Nine studies reported on outpatient services, while four reported on hospitalisation and four reported both outpatient and hospitalisation services. Fifteen studies reported on primary outcome (utilisation), two reported on both primary and secondary outcomes, while two studies reported only secondary outcome.

Risk of bias

The only RCT had unclear risk for random sequence generation, blinding of outcome assessment, attrition

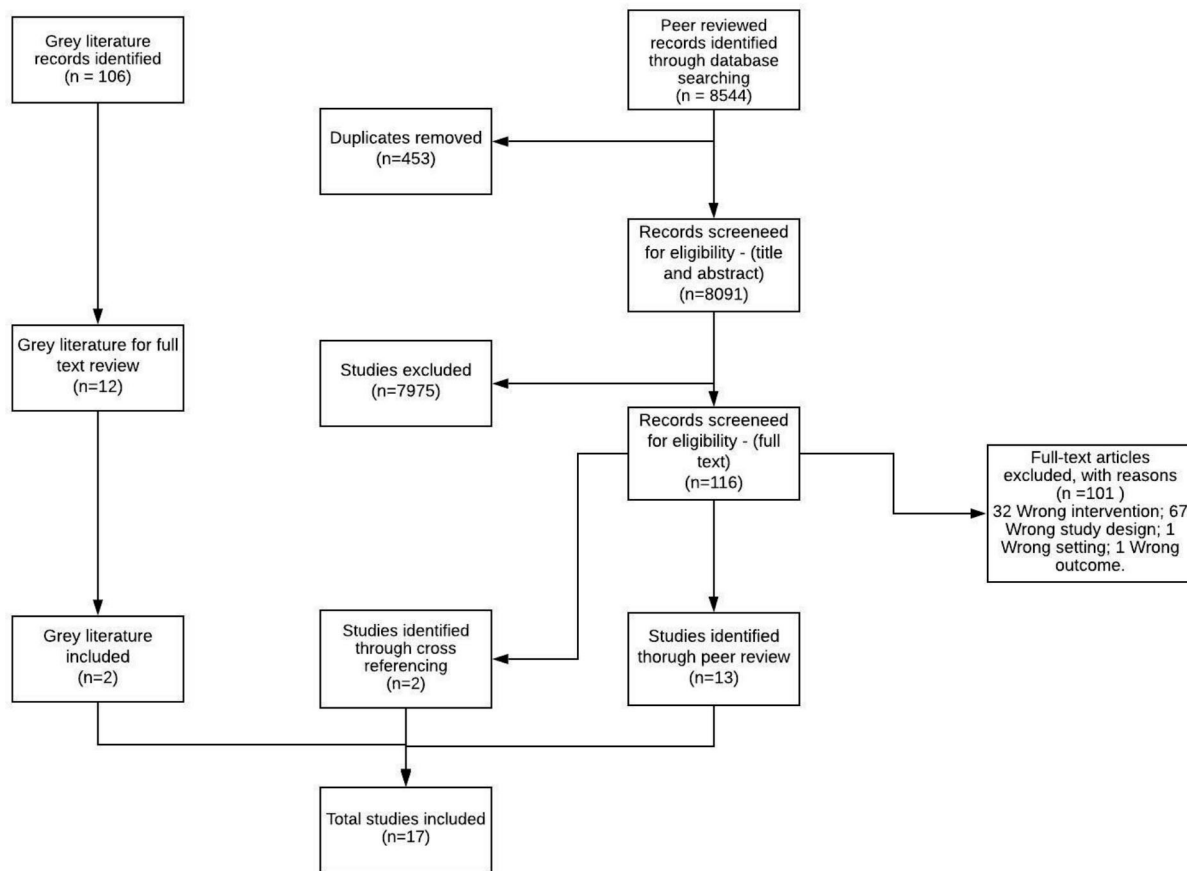


Figure 1 PRISMA flow diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

bias and selective reporting. However, there was high risk for allocation concealment and blinding of participants and personnel. For other 14 quasi-randomised trials, 11 were at high risk for allocation concealment, while 3 were considered to have unclear risk. Two studies had similar baseline characteristics and were at low risk, while two studies were judged to be at high risk and 10 had insufficient information to permit judgement and, therefore, marked unclear risk. All studies had unclear risk of attrition bias, adequate prevention of knowledge and contamination between study groups. Low risk for selective reporting was noted in all studies (online supplemental figure S1).

CO only

Out of nine studies,^{32 33 39–42 46–48} four were based in Pakistan,^{33 40–42} three in Afghanistan^{46–48} and two in Iran.^{32 39} Our included studies contain a mix of study designs. Four Pakistan studies consisted of three endline with controls^{40–42} and one ITS.³³ Three Afghanistan studies consisted of two CBAs^{46 47} and one cluster RCT.⁴⁸ And two Iran studies consisted of one endline with comparison³⁹ and ITS each.³²

Primary outcome

Outpatient visits

We included five studies that reported on outpatient visits.^{33 39–41 46} Out of them, three were based in

Pakistan and found no significant difference between Primary Healthcare Initiati (PPHI) contracted and non-contracted facilities for general outpatient visits. This trend was observed at national and facility level.^{33 40} However, one study favoured provincial contracting and reported higher general, female and child (<5 years) outpatient visits at contracted facilities compared with those at non-contracted facilities.⁴¹ Only one study each was included from Afghanistan and Iran. In Afghanistan, the study noted significantly higher general, female and child (<5 years) outpatient visits at contracted facilities compared with those at non-contracted facilities.⁴⁶ Similarly, in Iran, higher outpatient visits were noted in the contracted cooperative health centres (CHCs) compared with the non-contracted public health centres (PHCs).³⁹ The results need to be interpreted with caution due to limited studies, lack of matched controls and minimal assessment of outpatient visits at population level.

Maternal and reproductive health

We included six studies that reported on maternity care and/or reproductive health.^{32 39–42 49} Out of them, three focused on maternity care,^{31 41 47} one on reproductive health³⁸ and two reported both.^{40 41} Mixed results were noted in the included studies. Three studies were based in Pakistan,^{40–42} and found that antenatal care (ANC) and deliveries are higher in national PPHI, provincial

**Table 1** Study characteristics

Init initiative	Study	Study design	Analysis
Contracting-out			
Afghanistan Basic and Essential Package of Health Services	Engineer <i>et al</i> 2016 ⁴⁸	Cluster randomised trial Data from household surveys	Utilisation of maternal child services comparing populations served by P4P facilities of contracted NGOs vs non P4P facilities of contracted NGOs
	Alonge <i>et al</i> 2015 ⁴⁷	Before–after, intervention and control Data of patient exit interviews from health facility assessments	Utilisation by socioeconomic quintiles compared across contracting-out of NGOs, contracting- in of semigovernment agency and direct government managed facilities
	Arur <i>et al</i> (2010) ⁴⁶	Before–after, intervention and control Data from health facility assessments	Utilisation of out-patient services compared across contracting-out of NGOs, contracting- in of semigovernment agency and direct government managed facilities
Iran Cooperative Health Centres (CHC)	Farahbakhsh <i>et al</i> 2012 ³⁹	Endline with control assessment Primary household survey data and facility assessments	Utilisation and quality of privately managed CHCs vs government PHCs
Family Physician programme (FPP)	Jabbari Beyrami <i>et al</i> 2019 ³²	Interrupted time series (ITS) analysis Across multiple time in points, e rural household data	Overall trends of maternal and child health utilisation and health impact over a 20-year pre- FP intervention (1994–2004) and post FP (2005 to 2013) time period
Pakistan President’s Primary Healthcare Initiative (national)	Martinez <i>et al</i> 2010 ⁴⁰	Endline with control assessment Primary data from Health facility assessment+Household survey	Utilisation of curative, preventive and promotive services, quality of services, pro-poor utilisation
President’s Primary Healthcare Initiative (national)	Malik <i>et al</i> 2017 ³³	ITS analysis Secondary data analysis of household utilisation national datasets, multiple points in time	Utilisation of BHUs for curative care and childhood diarrhoea in populations served by contracted BHUs vs non-contracted BHUs, by socioeconomic quintiles
Provincial PPP contracts (one province)	Zaidi 2020 ⁴¹	Endline with control assessment Primary data from health facility assessments	Service volumes and quality of services across contracted facilities vs non-contracted
District contracts (two districts)	Zaidi <i>et al</i> 2015 ⁴²	Endline with control assessment Primary data from Health facility assessments+household survey	Service utilisation and quality of services across contracted facilities vs non-contracted
Contracting-out under Insurance			
Egypt National Health Insurance	Rashad <i>et al</i> 2019 ⁴³	Cross-sectional correlational study. Secondary data analysis of Demographic and Health Survey data set correlating utilisation among insured and non-insured population, applying propensity score matching	Maternal and newborn care service utilisation rates compared between insured and non- insured
Tunisia Mandatory Health Insurance	Makhloufi <i>et al</i> 2015 ⁴⁴	Cross-sectional correlational study. Secondary data analysis of insurance schemes, formal-mandatory and a state-subsidised insurance using propensity score matching.	Utilisation of out-patient services segregated by urban and rural across insured and non-insured Utilisation of in-patient services segregated by urban and rural across insured and non-insured
Jordan Civil Insurance Programme	Halasa-Rappel <i>et al</i> 2020 ⁴⁵	Cross-sectional correlational study Secondary data analysis of Healthcare Utilisation and Expenditure Survey to compare utilisation across insured and non-insured population	Per capita ambulatory visits Per capita admission rates
Contracting-out and Insurance			
Iran FPP+Insurance Organisation	Bayati <i>et al</i> 2020 ³⁴	ITS analysis Multiple time points, using data from Social Security Insurance Organisation	Analysis of utilisation of services for combined effect of FPP and insurance and health transformation plan on people insured by social security organisation during 2009–2016.
	Rashidian <i>et al</i> 2013 ³⁶	ITS analysis Multiple points in time, national population data and insurance records database	Analysis of hospital utilisation rates for combined effect of FPP and insurance programme
BHUs, Basic Health Units; NGOs, non-governmental organisations; P4P, Pay for Performance; PPP, public–private partnership.			

Table 2 Purchasing initiatives in regional LMICs

Country	Initiative	Beneficiaries	Scale	Service providers	Services provided	Payment
Contracting out						
Afghanistan	Contracting-out delivery of Basic and Essential Health Service Packages (BPHS and EPHS) 2004 onwards	Rural population	31 provinces: 355 government facilities, 4000 health posts	International and local NGOs, through 3 different contracting models	Primary and secondary healthcare services	Funding through donors. BPHS and EPHS are available free of charge
	Pay for performance overlaid on NGO contracts, 2010–2012	Rural population	11 provinces	International and local NGOs	PHC services	Funding through donors. BPHS and EPHS are available free of charge
Iran	Contracting-out private providers for primary healthcare (PHC) services through Cooperative Health Clinics, Ministry of Cooperatives	Rural population	2 provinces, 17 cities	Competitive contracting of private practices/local NGOs	Service contracts for outpatient curative care and preventive health PHC services	Healthcare costs provided by governmental subsidy as a capitation-based payment method for each service package.
Pakistan	Contracting-out management of PHC centres called Basic Health Units (BHU) - President's Primary Healthcare Initiative, national initiative 2008–2012	Rural population	All four provinces over 82 districts, 2393 BHUs	Single source contracting of semigovernment agency	Management of Primary Health Centres	Government purchase of services. Subsidised healthcare
	Contracting-out management of range of PHC centres for delivery of Essential Health Service Package, 2017–2021	Rural population	One province over 24 districts, 132 PHC centres	Competitive contracting of private providers (local NGOs, medical charities, health consulting agencies)	Management of Primary Health Centres	Government purchase of services. Subsidised healthcare
	Contracting-out management of selected PHC centres District governments 2003–2007	Rural population	3 provinces: 1–2 facilities per contract	Sole source contracting of NGOs	Management of Primary Health Centres	Government purchase of services. Subsidised healthcare
Insurance involving private providers						
Egypt	National Health Insurance Scheme	All employees working in the government sector, some public and private sector employees, pensioners and widows.	59% of population	Primary and inpatient services from government and private providers. Contracting-out for selected services	Primary health services Secondary Healthcare facilities Tertiary hospitals and/or specialised centres	Case-based or Fee for Service. <ul style="list-style-type: none"> ▲ Increased subsidise the contributions of poor and vulnerable population, estimated at 22% of Universal health insurance (UHI) revenues. ▲ Earmarked taxes such as Tobacco taxes and others estimated at 21%. ▲ Co-payments 5% of total UHI revenues.
Iran	Iran Health Insurance Organisation (HIO) funded health insurance	Permanent civil servants, rural residents, informal sector, self-employed, socially vulnerable groups	50% of population.	Specialist outpatient and inpatient services	Inpatient and outpatient services	Employee pays 7%, the employer 20% and state 3%. For self-employed people, the total of 27% of their wages. Outpatient treatment (private or non-IHO clinics), a 30% out-of-pocket fee. Treatment in MoHME hospitals, charged 6%–10% of tariffs for inpatient.

Continued

Table 2 Continued

Country	Initiative	Beneficiaries	Scale	Service providers	Services provided	Payment
Tunisia	Mandatory Health Insurance (MHI) by National Health Insurance Fund	MHI: Public and formal private sectors employees and self-employed workers	66% of population	Outpatient and inpatient services Private hospitals	Public sector: Outpatient care. Private sector: Outpatient care following referral by a General Practitioner. Payment is via Caisse Nationale d'Assurance Maladie (CNAM), topped up with user co-payments. The reimbursement system: Inpatient and outpatient services accessed through a network of contracted care providers, with payment reimbursed by CNAM (at set rates).	Mandatory payroll contribution rate of 6.75%. MHI enrollees are offered two options: (1) The single-provider: Either private or public provider; incentives for the public sector (cap on the required annual co-payments, CNAM borne additional costs) and higher Co-payments and fee for private single provider with gatekeeper mechanism. (2) Two-sector: entitled to two-sector (or reimbursement) scheme, care from any public or private provider with full payment of regulated tariff of the care service provided at the point of consumption, and then request reimbursement from the CNAM.
Jordan	Civil Health Insurance Programme	Government officials and dependents	41.7% of population	Outpatient and inpatient care Public sector facilities and hospitals, supplemented by private hospitals	Primary, secondary and tertiary services	Civil servants: 3% of their monthly salary. Special/ the elite grade 0% on MOH, other public providers, private providers and private pharmacies and diagnostic services, 5% on MOH pharmacies). Special/ the elite grade (first, second and third grade) 0% on MOH, Other public providers (with referral), private pharmacies and diagnostic services, 5% on MOH pharmacies, other public providers: 20% without referral; private providers: 20%.
LMICs, low-income and middle-income countries; MOH, Ministry of Health; NGO, non-governmental organisation.						

and district contracted facilities compared with those that are non-contracted.^{20–42} However, the use of family planning services remained low in both contracted and non-contracted facilities.^{40–42} Study based in Iran showed higher utilisation of laboratory and ultrasounds tests during pregnancy in contracted facilities.³² Pap smear screening also increased in contracted CHCs compared with the non-contracted PHCs.³⁹ However, one study reported a potential decline in ANC visits within contracted facilities in Iran.³² In addition, one study from Afghanistan showed no significant difference between contracted and non-contracted facilities in terms of ANC and postnatal care visits (PNC).⁴⁸

Child health

We included four studies that reported on child health.^{33 40 41 48} Out of the three studies based in Pakistan, one found no significant change in the treatment of childhood diarrhoea between national PPHI contracted and non-contracted facilities.³³ Two studies reported on immunisation volumes. One study reported a decline in immunisation under national PPHI,⁴⁰ while the other reported a minimal change in immunisation between contracted and non-contracted facilities under provincial contracting.⁴¹ One study from Afghanistan compared the impact of a Pay for Performance (P4P) scheme overlaid on contracting payments. Introduction of P4P arrangement in contracted facilities did not result in increase in maternal and child service utilisation at contracted health facilities supported by P4P as compared with contracted health facilities that did not have a P4P arrangement.⁴⁸ This was attributed to poor understanding of P4P by the recipient staff and potential demand side barriers in accessing services (table 3).

Secondary outcome

We included three studies that reported on equitable utilisation of health services. Out of them, two were based in Afghanistan and found that low socioeconomic households had higher odds of attending contracted health facilities,⁴⁷ and were more likely to have higher outpatient visits for new cases.⁴⁶ One study from Pakistan noted marginally higher utilisation by the poor for childhood diarrhoea, but no significant change for general outpatient visits³³ (table 3).

CO under insurance

Out of three studies, one study was conducted in each of Egypt, Tunisia and Jordan.^{43–45} All of them were cross-sectional correlational studies.

Primary outcome

Outpatient and inpatient visits

We included two studies that reported on outpatient visits in Tunisia and Jordan.^{44 45} The study from Tunisia assessed the effect of two insurance schemes, formal Mandatory Health Insurance and state subsidised (MAS) insurance, on the utilisation of outpatient and inpatient visits.⁴⁴ The study reported an increase in outpatient and inpatient

among the insured population compared with the uninsured. However, significant variations in the effect of these schemes were observed across services and areas.⁴⁴ In addition, the study from Jordan also reported that the mean number of outpatient visits increased over time in the insured population compared with the uninsured.⁴⁵

Maternal and child health

One study reported on maternal and child health in Egypt.⁴³ The study noted a marginal increase in the utilisation of maternity services (such as ANC, PNC and facility births) in the insured population compared with the uninsured. However, a decline was noted in the rate of newborn check-up among the insured population over non-insured.

Secondary outcome

We included one study that reported on the equitable utilisation of health services in Tunisia.⁴⁴ The study assessed utilisation differentials for the disadvantaged by analysing hospitalisation among urban insured versus rural insured populations.⁴⁴ Mean annual number of consultations and hospitalisation days is higher in insured versus uninsured populations (table 4).

Combined CO and insurance

All the five studies were based in Iran and were ITS. All studies reported on the combined effect of CO and insurance of primary healthcare on inpatient admissions.^{34–38} The studies were conducted in rural and urban settings. Three studies were from a rural setting and reported an increase in annual inpatient hospitalisation rates among the hospital insured population covered also by family practitioner contracts compared with a population only covered by hospital insurance.^{35–37} Two studies were from an urban setting and reported a decline in volume of inpatient admission in hospitals serving insured populations covered by family practice schemes compared with populations only covered by hospital insurance^{34 38} (table 4).

The utilisation of health services by socioeconomic class was not reported in these studies.

DISCUSSION

The review synthesised regional evidence on utilisation of government managed purchasing interventions of CO and CO-I mechanisms that provide subsidised or free services to a greater extent from private providers. Despite a proliferation in domestically driven purchasing interventions a regional synthesis had not been undertaken, hence we set out to provide an EMR perspective, consolidate what is known and underscore evidence gaps to contribute preliminary lessons to support the current regional policy thrust on private provider engagement for UHC 2030.

The review highlights several initiatives by country governments that involved purchase of private sector

**Table 3** Outcome of contracting studies

Services	Studies	Indicator	Intervention/ post	Control/ pre	Difference
Primary outcome: utilisation of health services					
Maternity	Engineer 2016 ⁴⁸ (P4P contracting vs non-P4P contracting)	% mothers with ANC 1+ visit from skilled provider.	56.2% (95% CI 50.1% to 62.3%)	55.6% (95% CI 49.5% to 61.8%)	0.6 % p=0.94
		% mothers with PNC check-up by skilled provider	31.2% (95% CI 25.8% to 36.6%)	30.3% (95% CI 25.7% to 34.9%)	0.9% p=0.98
		% mothers received skilled birth attendance	33.9% (95% CI 28.1% to 39.7%)	28.5% (95% CI 24.1% to 33.0%)	5.4% p=0.17
	Jabbari Beyrami <i>et al</i> 2019 ³²	Ratio of having at least one ultrasound during pregnancy	90.5%	29.1%	61.4% p<0.001
		No of routine laboratory tests performed during pregnancy	93.4%	79.4%	14% p<0.001
		No of ANC visit per mother	7.77±1.22	9.02±0.30	p<0.114
	Martinez <i>et al</i> 2010 ⁴⁰	% women received ANC1+from health facility	53.6%	22.6%	31%*
		% women delivering with BHU staff assistance	37.4%	18%	19.4%*
	Zaidi <i>et al</i> 2015 ⁴²	% women received ANC1+visit from health facility	75.5%	26.6%	48.9% p<0.001
		% mothers received PNC visit from health facility	29.8%	10.5%	19.3% p<0.001
		% mothers delivered at health facility	23.1%	4.6%	18.5% p<0.001
	Zaidi 2020 ⁴¹	% of facilities with minimum ANC volume (>5/day)	54%	0%	54%*
		% of facilities with minimum deliveries (>20/month)	31%	6%	25%
	Reproductive health	Farahbaksh <i>et al</i> 2012 ³⁹	% women underwent pap smear screening at health facility	49.3%	38%
Martinez <i>et al</i> 2010 ⁴⁰		% facilities with average monthly family planning clients >24	15.4%	20.8%	-5.4%*
Zaidi 2020 ⁴¹		% facilities with minimum volume of family planning clients (>2/day)	35%	28%	7%*
Child health	Engineer <i>et al</i> 2016 ⁴⁸	% children received pentavalent 3 vaccination (%)	49.6%	52.3%	-2.7%* p=0.41
	Martinez <i>et al</i> 2010 ⁴⁰	% facilities meeting minimum volume of Diphtheria-Pertusis-Tetanus vaccinations (>60/ month)	19.2%	62.5%	-43.3%*
	Malik <i>et al</i> 2017 ³³	% households using BHUs for childhood diarrhoea (rural populations)	-	-	DID Increase of 3pp
	Zaidi 2020 ⁴¹	% facilities with minimum volume of Penta 3 vaccinations (30 per month)	81%	67%	14.0%*
OPD	Arur <i>et al</i> 2010 ⁴⁶	% of facilities with minimum new outpatient visits (per 1000 population/year)	-	-	DID increase of 29% (p<0.01)
		% of facilities with minimum new female outpatient visits (per 1000 population/year)	-	-	DID increase of 41% (p<0.01)
		% of facilities with minimum new outpatient visits in <5 years children (per 1000 population/ year)	-	-	DID increase of 27% (p<0.05)
	Farahbaksh <i>et al</i> 2012 ³⁹	% individuals visited health facility for general check-up	53.8%	23.2%	30.6% p<0.001
	Malik <i>et al</i> 2017 ³³	% households using BHUs for general illness (rural population)	-	-	DID Increase of 1.5pp
	Martinez <i>et al</i> 2010 ⁴⁰	% facilities with minimum OPD visits (>20 per day)	53.7%	65.1%	-11.4%*
	Zaidi 2020 ⁴¹	% facilities with minimum OPD visits (>30 per day)	84%	56%	28%*
		% facilities with minimum female OPD visits (>10 patients per day)	85%	61%	24%*
% facilities with minimum OPD in <children 5 years (>5 per day)		77%	44%	33%*	

Continued

Table 3 Continued

Services	Studies	Indicator	Intervention/ post	Control/ pre	Difference
Secondary outcome: equitable utilisation of health services					
Pro-poor utilisation	Arur <i>et al</i> 2010 ⁴⁶	% of facilities with new outpatient visits from the poorest 20%	–	–	DID increase of 68% (p<0.01)
	Alonge <i>et al</i> 2015 ⁴⁷	% low SES households attending health facility	–	–	DID adjusted OR 2.50 (1.32, 4.74), p=0.005
	Malik <i>et al</i> 2017 ³³	% low SES attending health facility for childhood diarrhoea	–	–	DID Increase of 4pp (significant)

*Absolute value of the difference of % calculated.
 ANC, antenatal care; BHU, basic health units; DID, difference in difference analysis; DPT, Diptheria-Pertusis-Tetanus Vaccination; OPD, Outpatient care; PNC, postnatal care; P4P, pay for performance; SES, socioeconomic status.

providers to deliver health services in EMR, although few have been scientifically published and even fewer met the criteria for the review. Purchasing initiatives not included in the review are provided in online supplemental table S4. Seventeen studies,^{32–48} inclusive of 15 published articles and 2 grey literature reports, met the criteria for the systematic review assessment, eligible studies were confined to only 6 regional countries—Afghanistan, Pakistan, Iran, Egypt, Tunisia and Jordan—whereas eligible literature was not reported from other regional states. The evidence reviewed composed of nine studies involving CO stand-alone interventions,^{32 33 39–42 46–48} three studies on CO-I^{43–45} and five studies on combined CO-I.^{34–38}

Impact on outpatient curative care utilisation is largely seen as a result of both CO and CO-I interventions. There is indicative positive evidence of improved maternity care service volumes mainly from CO interventions and less reported from CO-I interventions. Data on child health service volume are thin and indicate a negative impact on service volumes, whereas data on reproductive health services are scanty and inconclusive. Despite unfavourable estimates for child vaccination, a meaningful conclusion cannot be drawn as these could be due to demand-side constraints rather a decrease in utilisation. Supplementing insurance with primary care contracting out was reported by three studies with increased hospital utilisation in rural areas and decreased hospital use in urban setting. Evaluation metrics from studies did not provide standardised indicators across purchasing interventions to allow for meta-analysis of pooled data. Overall, we found stronger evidence on utilisation impact for stand-alone CO initiatives and weaker evidence for CO-I initiatives.

Demonstration of relative utilisation by the poor or disadvantaged was limited to four studies—three studies of CO interventions showed positive utilisation in the poor while the only study from CO-I showed higher utilisation in urban insured versus rural insured beneficiaries. Although specific measurements for the poor versus non-poor are limited, suggestive pro-poor effects can be inferred for stand-alone CO initiatives as utilisation took

place in disadvantaged settings. There is scanty pro-poor evidence for insurance interventions.

Global systematic reviews of CO stand-alone interventions in LMICs show moderate to weak evidence of improved utilisation,^{49 50} whereas less restricted reviews by Liu *et al* and Loevinsohn,^{23 51} similarly noted a positive utilisation effect. Moreover, with respect to insurance schemes, a global review by Acharya *et al*⁵² notes dearth of evidence on improved utilisation and relative utilisation by the poor remains weak, whereas review by Erlangga *et al*⁵³ shows improvement in utilisation of curative care but an unclear effect on preventive care.

There are limitations that are worth identifying. To minimise publication bias, a comprehensive search including grey literature was conducted, although not exhaustive since we restricted our search to sources that were accessible electronically. The grey literature included facility assessment reports. Some purchasing initiatives might have been missed due to lack of scientific evaluations and reporting. Evidence is heterogeneous as outcomes reported lack consistency of indicators. We do not know if improved utilisation, when seen, is reflective of increased service coverage or simply a shift from other providers. Quality of services has not been examined and could be an important predictor of utilisation. We assumed service utilisation took place at no or nominal payment by beneficiaries and did not assess changes in out-of-pocket expenditure at point of utilisation. Lastly, the context is likely to have a strong influence on both the manner of implementation and success of intervention and, therefore, any generalisation should be undertaken with caution.

This is the first regional systematic review, to our knowledge, to assess the impact of CO purchasing arrangements on service utilisation in the EMR, making it an important contribution to the field. Importantly, the contracting interventions were not confined to fragile states and humanitarian contexts as often reported from global reviews, but implemented in middle income and LMICs during periods of political stability and predominantly

**Table 4** Outcome of contracting out under insurance studies

Services	Studies	Indicator	Intervention Mean (SD)	Control Mean (SD)	Difference
Primary outcome					
Maternal care	Rashad <i>et al</i> 2019 ⁴³	Mean ANC 4+ visits	0.934 (0.249)	0.827 (0.379)	4.1%
		Mean PNC (mother)	0.911 (0.285)	0.823 (0.382)	3%
		Mean facility births	0.317 (0.466)	0.265 (0.442)	4.5%
Childcare	Rashad <i>et al</i> 2019 ⁴³	Mean newborn check-up within 2 months	0.469 (0.500)	0.337 (0.473)	-6.8%
Outpatient	Halasa-Rappel 2020 ⁴⁵	Mean annual ambulatory visits	4.44 (13.51)	3.17 (12.56)	0.25 (17.66)
Secondary outcome: equitable utilisation of health services					
Outpatient	Makhloufi <i>et al</i> 2015 ⁴⁴	Mean no of consultations (MHI)	0.717 (1.391)	0.483 (1.001)	19% significant increase in the urban areas only
	Makhloufi <i>et al</i> 2015 ⁴⁴	Mean no of consultations (MAS)	0.741 (1.341)	0.483 (1.001)	28% significant increase in urban and 27% significant increase in rural areas
Inpatient	Makhloufi <i>et al</i> 2015 ⁴⁴	Mean no of annual hospitalisation days (MAS)	1.119 (6.912)	0.367 (2.853)	75% significant increase in urban and 46% significant increase in rural areas
	Makhloufi <i>et al</i> 2015 ⁴⁴	Mean no of annual hospitalisation days (MHI)	0.609 (3.700)	0.367 (2.853)	26% significant increase in the urban areas only
Insurance+contracting-out					
Inpatient	Rashidian <i>et al</i> 2020 ³⁵	% of total hospitalisation (2006–2013)	78% to 83%		+5%*
		% of avoidable hospitalisation (2006–2013)	22% to 17%		-5%*
	Rashidian <i>et al</i> 2019 ³⁶	Immediate effect: gradual effect	1.55 per 1000 per month 0.034/1000 per month		(95% CI 1.24 to 1.86) (95% CI 0.02 to 0.04)
	Rashidian <i>et al</i> 2013 ³⁷	Immediate effect on hospitalisation rates (from 2003 to 2007) pre/post intervention	From 44.3 per 1000 inhabitants to 65.6 per 1000 inhabitants		P<0.001
		Immediate effect on hospitalisation rates (from 2003 to 2007) pre/post comparison group	From 95.7 per 1000 inhabitants to 92.7 per 1000 inhabitants		P>0.4
		Annual hospitalisation rate (2011) b/w intervention and comparison	62.5 per 1000 inhabitants	78.8 per 1000 inhabitants	P<0.001
	Bayati <i>et al</i> 2020 ³⁴	No of specialist visits (22 months trend)	-598.00 (0.586)	992.35 (0.000)	-1590.35 (0.159)
		No of diagnostic imaging (22 months trend)	-828.19 (0.035)	1778.59 (0.000)	-2606.79 (0.000)
		No of laboratory tests (22 months trend)	-881.69 (0.206)	790.84 (0.000)	-1672.53 (0.021)
		No of inpatient admissions - (22 months trend)	16.91 (0.728)	132.11 (0.000)	-115.20 (0.028)
	Rouhani <i>et al</i> 2021 ³⁸	Hospitalisation rate	Immediate effect: 0.085/1000/ month Long term effect: -0.056/1000/ month		P=0.807 (95% CI 0.781 to -0.611) P=0.097 (95% CI 0.067 to -0.067)

*Absolute value of the difference of % calculated.

ANC, antenatal care; MHI, Mandatory Health Insurance; PNC, postnatal care.

with domestic financing. The emerging lessons are hence contextually more translatable for action planning by EMR states for effective service utilisation and targeting benefits towards the poor.

The review provides a preliminary analysis and supportive evidence for WHO regional resolution on private sector engagement for advancing UHC.¹⁸ There are three important lessons for policy makers in the EMR. First, technical assistance and resourcing for measurement of effects should be embedded within purchasing initiatives to provide adaptive lesson learning, redesign and course correction. Second, impact on outpatient

curative care utilisation is largely demonstrated but formative work is required on how other health services can be more effectively tied to curative care volumes. Third, insurance schemes need disaggregated comparative measurement on service utilisation at private providers versus public sector to inform choice of contracted-out providers. Future research would benefit by a complementing realist review,⁵⁴ on why CO and CO-I interventions worked or did not work when applied in different contextual settings, by examining purchasing modalities as well as key determinants related to provider readiness and patient preferences.

Conclusion

Despite proliferation of domestically funded large scale initiatives in the EMR involving contracting of private providers for affordable health access there has been an evidence gap of systematic regional synthesis of impact. Purchasing involving stand-alone CO interventions and CO-I interventions in the EMR positively impact general curative care utilisation, suggested positive impact on various indicators of maternity care but scant evidence on other services. Policy attention is needed for embedded evaluations within programmes to inform design changes for achieving greater breadth in service utilisation, support for standardised outcome metrics, as well as more disaggregated utilisation data by private providers.

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REFERENCES

- WHO. Private sector engagement for advancing universal health coverage. world health organization- regional office for the eastern mediterranean, (october 2018) sixty fifth session, resolution EM/RC65/8. 2018. Available: https://applications.emro.who.int/docs/RC_Technical_Papers_2018_8_20546_EN.pdf
- The World Bank. World development indicators / the world by income and region [Available from]. n.d. Available: <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>
- Montagu D, Chakraborty N. Standard survey data: insights into private sector utilization. *Front Med (Lausanne)* 2021;8:624285.
- WHO Regional Office for the Eastern Mediterranean. *Understanding the private health sector: in the eastern mediterranean region. licence: CC BY-NC-SA 3.0 IGO.* Cairo, 2021.
- McPake B, Hanson K. Managing the public-private mix to achieve universal health coverage. *Lancet* 2016;388:622–30.
- Clarke D, Doerr S, Hunter M, et al. The private sector and universal health coverage. *Bull World Health Organ* 2019;97:434–5.
- WHO EMRO. *Role and contribution of private sector in moving towards universal health coverage in the eastern mediterranean region.* 2021.
- Khalifa AY, Jabbour JY, Mataria A, et al. Purchasing health services under the Egypt's new universal health insurance law: what are the implications for universal health coverage? *Int J Health Plann Manage* 2022;37:619–31.
- Doshmangir L, Bazayr M, Rashidian A, et al. Iran health insurance system in transition: equity concerns and steps to achieve universal health coverage. *Int J Equity Health* 2021;20:37.
- Zaidi SA, Bigdeli M, Langlois EV, et al. Health systems changes after decentralisation: progress, challenges and dynamics in Pakistan. *BMJ Glob Health* 2019;4:e001013.
- State health hospital list. 2021. Available: https://statehealth.com.pk/hospital_list.php
- Shepard D, Halasa-Rappel Y, Al-Halaseh I, et al. *Health care cost study at ministry of health and the cost and financial impact of expanding the civil insurance program to vulnerable jordanians and syrian refugees.* Amman, Jordan: UNICEF Jordan Country Office, 2017.
- Khalife J, Rafeh N, Makouk J, et al. Hospital contracting reforms: the Lebanese Ministry of public health experience. *Health Syst Reform* 2017;3:34–41.
- World Health Organization. *Regional office for the eastern M. strengthening health financing systems in the eastern mediterranean region towards universal health coverage: health financing atlas 2018.* Cairo: World Health Organization, Regional Office for the Eastern Mediterranean, 2019.
- Baloul I, Dahlui M. Determinants of health insurance enrolment in Sudan: evidence from health utilisation and expenditure household survey 2009. *BMC Health Serv Res* 2014;14.
- Yassine A, Hangouche AJ, El Malhouf N, et al. Assessment of the medical expenditure of the basic health insurance in Morocco. *Pan Afr Med J* 2020;35:115.
- Salehi AS, Saljuqi ATK, Akseer N, et al. Factors influencing performance by contracted non-state providers implementing a basic package of health services in Afghanistan. *Int J Equity Health* 2018;17:128.
- WHO EMRO. Private sector engagement for advancing universal health coverage. world health organization- regional office for the eastern mediterranean, (october 2018) sixty-fifth session, resolution EM/RC65/R.3(D). 2018. Available: https://applications.emro.who.int/docs/RC65_Resolutions_2018_R3_20651_EN.pdf
- El-Jardali F, Akl EA, Karroum LB, et al. Systematic reviews addressing identified health policy priorities in eastern Mediterranean countries: a situational analysis. *Health Res Policy Syst* 2014;12:48.
- PRISMA [online]. 2021. Available: <https://www.prisma-statement.org/>
- Gordon ML, Walsh TP. Outsourcing technology in government: owned, controlled, or regulated institutions. *Journal of Government Information* 1997;24:267–83.
- Palmer N, Mills A. Contracts in the real world: case studies from southern Africa. *Soc Sci Med* 2005;60:2505–14.
- Loevinsohn B, Harding A. Buying results? contracting for health service delivery in developing countries. *Lancet* 2005;366:676–81.
- van Hees SGM, O'Fallon T, Hofker M, et al. Leaving no one behind? social inclusion of health insurance in low- and middle-income countries: a systematic review. *Int J Equity Health* 2019;18:134.
- Menotti EP, Farrell M. Vouchers: a hot ticket for reaching the poor and other special groups with voluntary family planning services. *Glob Health Sci Pract* 2016;4:384–93.
- Evans WD. How social marketing works in health care. *BMJ* 2006;332:1207–10.

- 27 Koehlmoos TP, Gazi R, Hossain SS, *et al.* The effect of social franchising on access to and quality of health services in low- and middle-income countries. *Cochrane Database Syst Rev* 2009;2009:CD007136.
- 28 Mills A, Brugha R, Hanson K, *et al.* What can be done about the private health sector in low-income countries? *Bull World Health Organ* 2002;80:325–30.
- 29 Covidence systematic review software VHI, Melbourne, Australia. n.d. Available: www.covidence.org
- 30 Higgins J. Cochrane handbook for systematic reviews of interventions. version 5.1.0 [updated March 2011]. The Cochrane Collaboration. 2011. Available: www.cochrane-handbook.org
- 31 Collaboration C. Cochrane Effective Practice and Organisation of Care (EPoC). *Synthesising results when it does not make sense to do a meta-analysis EPoC resources for review authors*. 2017.
- 32 Jabbari Beyrami H, Doshmangir L, Ahmadi A, *et al.* Impact of rural family physician programme on maternal and child health indicators in Iran: an interrupted time series analysis. *BMJ Open* 2019;9:e021761.
- 33 Malik MA, Van de Poel E, Van Doorslaer E. Did contracting effect the use of primary health care units in Pakistan? *Health Policy Plan* 2017;32:1032–41.
- 34 Bayati M, Keshavarz K, Lotfi F, *et al.* Effect of two major health reforms on health care cost and utilization in Fars province of Iran: family physician program and health transformation plan. *BMC Health Serv Res* 2020;20:382.
- 35 Rashidian A, Salavati S, Hajimahmoodi H. The effect of access to primary care physicians on avoidable hospitalizations: a time series study in rural areas of Tehran Province, Iran. *Korean J Fam Med* 2020;41:282–90.
- 36 Rashidian A, Salavati S, Hajimahmoodi H, *et al.* Does rural health system reform aimed at improving access to primary health care affect hospitalization rates? an interrupted time series analysis of national policy reforms in Iran. *J Health Serv Res Policy* 2019;24:73–80.
- 37 Rashidian A, Joudaki H, Khodayari-Moez E, *et al.* The impact of rural health system reform on hospitalization rates in the Islamic Republic of Iran: an interrupted time series. *Bull World Health Organ* 2013;91:942–9.
- 38 Rouhani S, Esmaeili R, Yazdani Charati J, *et al.* The impacts of family physician plan and health transformation plan on hospitalization rates in Iran: an interrupted time series. *BMC Health Serv Res* 2021;21:658.
- 39 Farahbakhsh M, Sadeghi-Bazargani H, Nikniaz A, *et al.* Iran's experience of health cooperatives as a public-private partnership model in primary health care: a comparative study in East Azerbaijan. *Health Promot Perspect* 2012;2:287–98.
- 40 Martinez J, Pearson M, England R, *et al.* *Third-party evaluation of the PPHI in Pakistan: findings, conclusions and recommendations*. Islamabad: Technical Resource Facility, 2010.
- 41 Zaidi. Private sector engagement to improve access and quality of primary health care, Sindh. 2020. Available: https://www.researchgate.net/publication/357340938_Report-Private_Sector_Engagement_to_Improve_Access_and_Quality_of_Primary_Health_Care_Sindh_-_Abridged_version
- 42 Zaidi S, Riaz A, Rabbani F, *et al.* Can contracted out health facilities improve access, equity, and quality of maternal and newborn health services? evidence from Pakistan. *Health Res Policy Syst* 2015;13:54.
- 43 Rashad AS, Sharaf MF, Mansour EI. Does public health insurance increase maternal health care utilization in Egypt? *J Int Dev* 2019;31:516–20.
- 44 Makhloufi K, Ventelou B, Abu-Zaineh M. Have health insurance reforms in Tunisia attained their intended objectives? *Int J Health Econ Manag* 2015;15:29–51.
- 45 Halasa-Rappel Y, Fardous T, Jrasat M, *et al.* Actuarial cost and fiscal impact of expanding the Jordan civil insurance programme for health coverage to vulnerable citizens. *East Mediterr Health J* 2020;26:206–11.
- 46 Arur A, Peters D, Hansen P, *et al.* Contracting for health and curative care use in Afghanistan between 2004 and 2005. *Health Policy Plan* 2010;25:135–44.
- 47 Alonge O, Gupta S, Engineer C, *et al.* Assessing the pro-poor effect of different contracting schemes for health services on health facilities in rural Afghanistan. *Health Policy Plan* 2015;30:1229–42.
- 48 Engineer CY, Dale E, Agarwal A, *et al.* Effectiveness of a pay-for-performance intervention to improve maternal and child health services in Afghanistan: a cluster-randomized trial. *Int J Epidemiol* 2016;45:451–9.
- 49 Odendaal WA, Ward K, Uneke J, *et al.* Contracting out to improve the use of clinical health services and health outcomes in low- and middle-income countries. *Cochrane Database Syst Rev* 2018;4:CD008133.
- 50 Lagarde M, Palmer N. The impact of contracting out on health outcomes and use of health services in low and middle-income countries. *Cochrane Database Syst Rev* 2009:CD008133.
- 51 Liu X, Hotchkiss DR, Bose S. The effectiveness of contracting-out primary health care services in developing countries: a review of the evidence. *Health Policy Plan* 2008;23:1–13.
- 52 Acharya A, Vellakkal S, Taylor F, *et al.* The impact of health insurance schemes for the informal sector in low- and middle-income countries: a systematic review. In: *Impact of national health insurance for the poor and the informal sector in low and middle-income countries: a systematic review*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London, 2013.
- 53 Erlangga D, Suhrcke M, Ali S, *et al.* The impact of public health insurance on health care utilisation, financial protection and health status in low- and middle-income countries: a systematic review. *PLoS One* 2019;14:e0219731.
- 54 Pawson R, Greenhalgh T, Harvey G, *et al.* Realist review—a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy* 2005;10:21–34.