Appendix 1: Boolean Search Strings in Databases			
Data base	Key terms	Milestones٢٠٢٠	Country
PubMed SCOPUS Web of Science Global Health: Science and Practice HEALTH SYSTEMS EVIDENCE (BETA World health organization (Eastern Mediterranean Health Journal) Cochrane Library: Cochrane Reviews	("Health Workforce" OR "Human resource for health" OR "Workforce 2030" OR "Health Manpower" OR "Health Occupations Manpower" OR "health personnel" OR "health workers" OR "LOWER-MIDDLE INCOME" OR "Eastern Mediterranean Region")	(M1.1: "Accreditation mechanisms" OR "Accreditation standards" OR "health training institutions" OR M3.1: "institutional mechanisms" AND "intersectoral health workforce agenda" OR M3.2: "HRH unit" OR M3.3: "Regulatory mechanisms" AND "promote patient safety" OR "oversight of the private sector" OR M4.1: "track health workforce stock" OR "National Health Workforce Accounts" OR (NHWA) OR M4.2: "National health workforce accounts" OR "HRH data" OR "core indicators" OR M4.3: "Bilateral agencies" OR "multilateral agencies" AND "Health Workforce" AND "information assessment" OR "information exchange")	(Djibouti OR Egypt OR Iran OR Morocco OR Pakistan OR Palestine OR Tunisia)

Appendix 2:

Boolean Search Strings per Database: ("Health workforce" OR "Human resources for health" OR "Workforce 2030" OR "Health occupations workforce" OR "Health personnel" OR "Health workers" OR "Lower middle income" OR "Eastern Mediterranean region") AND ("Accreditation mechanisms" OR "Accreditation standards" OR "Health education institutions" OR "Institutional mechanisms" AND "Health workforce intersectoral agenda" OR "HRH unit" OR "Monitoring mechanisms" AND "Promoting patient safety" OR "Monitoring the private sector" OR "Tracking the health workforce" OR "National health workforce accounts" OR "HRH data" OR "Key indicators" OR "Bilateral organizations" OR "multilateral organizations" AND "health workforce" AND "information assessment" OR "information exchange") AND (Djibouti OR Egypt OR Iran OR Morocco OR Pakistan OR Palestine OR Tunisia).

Appendix 3 : Roles and Responsibilities of Reviewers at Different Stages of the Systematic Review	
Stage	Role
Initial Screening	Lead in defining inclusion and exclusion criteria; assess titles and abstracts for relevance.
	Assist in evaluating titles and abstracts; provide insights based on expertise.
	Contribute to the discussion on relevance and applicability of studies.
	Support initial assessments and provide feedback on criteria application.
Full-Text Review	Oversee the full-text evaluation process; ensure adherence to established criteria.
	Conduct detailed reviews of selected articles; confirm eligibility for inclusion.
	Analyse the methodological rigor of studies during full-text review.
	Evaluate the relevance and quality of the studies reviewed.
Data Extraction	Guide the development of standardized extraction forms; ensure comprehensive data collection.
	Lead the data extraction process; synthesize findings from extracted data.
	Focus on specific outcomes and metrics; assist in data organization.
	Contribute to the synthesis of findings and ensure clarity in data presentation.

Appendix 3 : Roles and Responsibilities of Reviewers at Different Stages of the Systematic Review	
Stage	Role
Quality Assessment	Coordinate the quality assessment using established appraisal tools.
	Evaluate the methodological quality of included studies; assess risk of bias.
	Participate in discussions regarding the quality and relevance of findings.
	Analyze the implications of quality assessments on overall review outcomes.
Documentation and Reporting	Ensure thorough documentation of decisions and rationales throughout the review process.
	Assist in compiling the final report and ensuring clarity in presentation.
	Contribute to the writing of the findings section; ensure accuracy in reporting.
	Review the final report for consistency and completeness of information.

Appendix 4: Assessing the risk of bias of studies										
Row	Authors	Year	Country	Selection Bias	Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Other Bias	Overall Risk of Bias
1	M. Iqbal et al.	2022	Eastern Mediterranean	Low	Low	Low	Low	Low	None	Low
2	Hameed W et al.	2022	Pakistan	Low	Low	Low	Low	Low	None	Low
3	Joudaki H et al.	2015	Iran	Low	Unclear	Low	Low	Low	None	Low
4	R. Hammoud et al.	2022	Lebanon	Low	Low	Low	Low	Low	None	Low
5	M. Safi-Keykaleh et al.	2022	Iran	Low	Low	Low	Low	Low	None	Low
6	M. F. Zeeshan et al.	2018	Pakistan	Low	Low	Low	Low	Low	None	Low
7	S. Khosravi et al.	2021	Iran	Low	Low	Low	Low	Low	None	Low
8	N. Aghakhani et al.	2020	Iran	Low	Low	Low	Low	Low	None	Low
9	Rana, Waleed et al.	2020	Pakistan	Low	Low	Low	Low	Low	None	Low
10	S. M. Ali et al.	2019	Pakistan	Low	Low	Low	Low	Low	None	Low
11	M. Hosseini Moghaddam et al.	2020	Iran	Low	Low	Low	Low	Low	None	Low
12	F. A. Chaudhary et al.	2020	Pakistan	Low	Low	Low	Low	Low	None	Low

13	L. Doshmangir et al.	2020	Iran	Low	Low	Low	Low	Low	None	Low
14	S. Zaidi et al.	2020	Pakistan	Low	Low	Low	Low	Low	None	Low
15	Z. Mumtaz	2020	Pakistan	Low	Low	Low	Low	Low	None	Low
16	S. A. Javed et al.	2019	Pakistan	Low	Low	Low	Low	Low	None	Low
17	M. S. Basir et al.	2019	Pakistan	Low	Low	Low	Low	Low	None	Low
18	Z. Mumtaz et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
19	K. Sheikh et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
20	A. Khalil et al.	2018	Egypt	Low	Low	Low	Low	Low	None	Low
21	C. O. Touré et al.	2021	Palestine	Low	Low	Low	Low	Low	None	Low
22	Mohammadpour M. et al.	2023	Iran	Low	Low	Low	Low	Low	None	Low
23	Ferrinho P. et al.	2022	Djibouti	Low	Low	Low	Low	Low	None	Low
24	Ayyat, Sh et al.	2021	Palestine	Low	Low	Low	Low	Low	None	Low
25	Alawode, Gafar B. et al.	2025	Iran	Low	Low	Low	Low	Low	None	Low
26	Haakenstad, Annie et al.	2023	Tunisia	Low	Low	Low	Low	Low	None	Low

27	Alkhaldi, M. et al.	2024	Palestine	Low	Low	Low	Low	Low	None	Low
28	S. Zare et al.	2021	Iran	Low	Low	Low	Low	Low	None	Low
29	F. El-Jardali et al.	2015	Eastern Mediterranean	Low	Low	Low	Low	Low	None	Low
30	Zhang, Xiaoxi	2015	Egypt	Low	Low	Low	Low	Low	None	Low
31	Charfi, Fatma et al.	2023	Tunisia	Low	Low	Low	Low	Low	None	Low
32	**Habib, R. et al**	**2020**	**Lebanon**	Low	Low	Low	Low	Low	None	Low
33	Al Hassani, W. et al.	2024	Morocco	Low	Low	Low	Low	Low	None	Low
34	Kasemy Z. A. et al.	2020	Egypt	Low	Low	Low	Low	Low	None	Low
35	Najjar, S. et al.	2022	Palestine	Low	Low	Low	Low	Low	None	Low
36	Zhila, N. et al.	2022	Iran	Low	Low	Low	Low	Low	None	Low
37	Mir A. M. et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
38	Norris, S. A.et al.	2022	Various	Low	Low	Low	Low	Low	None	Low
39	Akhlaq, A. et al.	2020	International	Low	Low	Low	Low	Low	None	Low
40	Alikhani, S. et al.	2017	Iran	Low	Low	Low	Low	Low	None	Low

41	Al-Mandhari, A. et al.	2019	Eastern Mediterranean	Low	Low	Low	Low	Low	None	Low
42	Moucheraud, C. et al.	2016	Pakistan	Low	Low	Low	Low	Low	None	Low
43	Irfan, M. et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
44	Mumtaz, Z. et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
45	Rafique, I. et al.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low
46	Shah, A. Y et al.	2021	Pakistan	Low	Low	Low	Low	Low	None	Low
47	Hameed, W. et al.	2022	Pakistan	Low	Low	Low	Low	Low	None	Low
48	Siebert, P. L. et al.	2024	Pakistan	Low	Low	Low	Low	Low	None	Low
49	Shahbaz, S et al.	2022	Pakistan	Low	Low	Low	Low	Low	None	Low
50	Ben Romdhane, H et al.	2015	Tunisia	Low	Low	Low	Low	Low	None	Low
51	Aly, H. M. et al.	2021	Egypt	Low	Low	Low	Low	Low	None	Low
52	Shaikh, B. T.	2015	Pakistan	Low	Low	Low	Low	Low	None	Low

Appendix 5 : Systematic Review Steps According to the GRADE Method		
Key Stage	Certainty of Evidence	Description
1. Evidence Identification	High	Relevant studies identified through systematic searches in databases and predefined inclusion/exclusion criteria. This involves comprehensive literature searches to ensure all pertinent studies are considered.
2. Study Selection	Moderate	Selection of studies based on quality, relevance, and adherence to inclusion criteria. Studies are screened for methodological rigor and relevance to the research question.
3. Data Extraction	Moderate	Systematic extraction of data from selected studies, ensuring accuracy and consistency. This includes collecting relevant outcome measures, sample sizes, and study characteristics.
4. Risk of Bias Assessment	Low	Evaluation of potential biases in included studies using standardized tools (e.g., Cochrane Risk of Bias tool). This assessment helps to understand the validity of the findings.
5. Data Synthesis	Low	Integration of findings from studies using meta-analysis where appropriate, or narrative synthesis if meta-analysis is not feasible. This stage assesses the overall effect size and heterogeneity among studies.
6. Recommendations Development	Very Low	Formulation of recommendations based on the synthesized evidence, considering clinical relevance, patient values, and practical applicability. Recommendations should be clear and actionable.

7. Implementation Considerations	Moderate	Identification of barriers and facilitators to implementing recommendations in practice. This includes assessing the feasibility of recommendations in real-world settings.
8. Updating Evidence	Moderate	Regularly updating the evidence base as new studies emerge to ensure that recommendations remain current and relevant. This stage is crucial for maintaining the integrity of the review over time.

Appendix 6 :Comparative Table of Country Achievements (Including Milestones 2020)					
Country	Milestone Numbers	Milestones	Best Practices	Related Studies	Key Achievements
Iran	1.1	1.1 All countries will have established accreditation mechanisms for health training institutions.	- Comprehensive training programs for healthcare workers. - Integration of mental health into primary care.	Study on Capacity Development for Effective Use of Health Human Resources	- Advancements in healthcare infrastructure. - High literacy rates (over 95%). - Growth in pharmaceutical industry. - Renewable energy projects.
Djibouti	3.1, 3.2, 3.3	3.1 All countries will have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda. 3.2 All countries will have an HRH unit with responsibility to develop and monitor policies and plans.	- Development of a strategic trade hub. - Investments in port and telecommunications infrastructure.	Research on Health Workforce Dynamics	- Strategic trade hub development. - Port infrastructure investments. - Access to clean water improvements. - Telecommunications growth.

Appendix 6 :Comparative Table of Country Achievements (Including Milestones 2020)					
Country	Milestone Numbers	Milestones	Best Practices	Related Studies	Key Achievements
		3.3 All countries will have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.			
Morocco	4.1, 4.2	4.1 All countries will have made progress in establishing registries to track health workforce stock, education, distribution, flows, demand, capacity, and remuneration. 4.2 All countries will have made progress in sharing HRH data through national health workforce accounts and	- Promotion of women's rights in healthcare and education. - Implementation of renewable energy projects.	Study on Nursing Education and Workforce Retention	- Implementation of renewable energy projects (e.g., Noor Solar Plant). - Women's rights advancements. - Tourism sector growth. - Economic diversification.

Appendix 6 :Comparative Table of Country Achievements (Including Milestones 2020)					
Country	Milestone Numbers	Milestones	Best Practices	Related Studies	Key Achievements
		submitting core indicators to the WHO Secretariat annually.			
Egypt	4.1, 4.2	4.1 All countries will have made progress in establishing registries to track health workforce stock, education, distribution, flows, demand, capacity, and remuneration. 4.2 All countries will have made progress in sharing HRH data through national health workforce accounts and submitting core indicators to the WHO Secretariat annually.	- Infrastructure development initiatives (e.g., Suez Canal). - Economic reforms to support healthcare improvements.	Health Infrastructure Investment Study	- Infrastructure investments (Suez Canal expansion). - Tourism sector recovery. - Economic reforms. - Education improvements.

Appendix 6 :Comparative Table of Country Achievements (Including Milestones 2020)					
Country	Milestone Numbers	Milestones	Best Practices	Related Studies	Key Achievements
Tunisia	3.1, 3.2	3.1 All countries will have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda. 3.2 All countries will have an HRH unit with responsibility to develop and monitor policies and plans.	- Focus on democratic transition and women's rights legislation. - Support for tech start-ups and innovation.	Public Health Education and Workforce Policies	- Democratic transition post-Arab Spring. - Education focus (high literacy rates). - Women's rights legislation. - Tech start-up ecosystem growth.
Palestine	3.1, 3.2	3.1 All countries will have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda. 3.2 All countries will have an HRH unit with responsibility to	- Development of higher education institutions. - Promotion of sustainable agriculture and cultural preservation.	NGO Development in Health Sector Study	- NGO growth addressing social issues. - Higher education institution development. - Sustainable agriculture initiatives. - Cultural preservation efforts.

Appendix 6 :Comparative Table of Country Achievements (Including Milestones 2020)					
Country	Milestone Numbers	Milestones	Best Practices	Related Studies	Key Achievements
		develop and monitor policies and plans.			
Pakistan	4.1, 4.2	4.1 All countries will have made progress in establishing registries to track health workforce stock, education, distribution, flows, demand, capacity, and remuneration. 4.2 All countries will have made progress in sharing HRH data through national health workforce accounts and submitting core indicators to the WHO Secretariat annually.	- Development of the China-Pakistan Economic Corridor (CPEC). - Investment in renewable energy projects.	Primary Healthcare Expansion Study	- Healthcare access improvements. - Growth in IT sector. - CPEC development. - Renewable energy projects.

Appendix 7: Advanced surveillance search results disaggregated by database						
Data base	Initial search results	In English	Since 2015	After removing repeats	Relevance of title & abstracts	Full-text articles assessed for eligibility
PubMed	1675	1675	1476	1468	159	126
ISI	275	275	193	137	61	55
Scopus	115	115	73	68	13	0
COCHRANE LIBRARY	33	33	24	24	2	0
Global Health: Science and Practice	104	104	90	90	2	0
HEALTH SYSTEMS EVIDENCE (BETA)	113	113	52	48	2	0
World health organization (Eastern Mediterranean Health Journal)	102	102	30	29	4	0
Google Scholar	351	351	217	210	7	0
Total	2768	2768	2155	2076	250	52