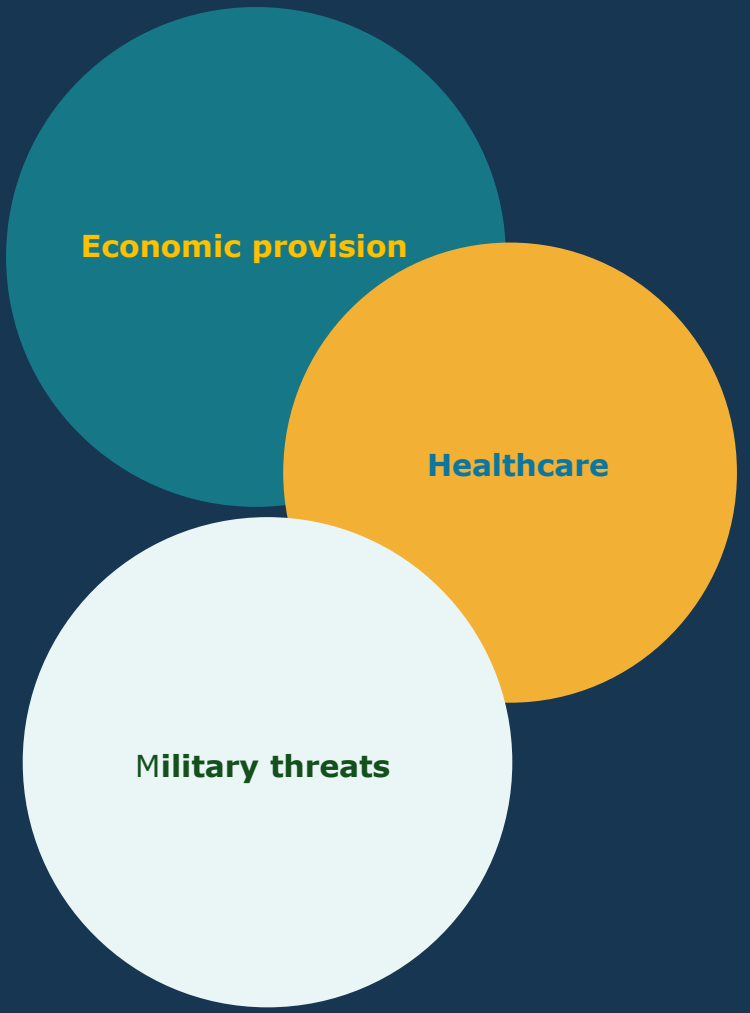
Priority directions of economic provision of healthcare system development during martial law: experience of Ukraine

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Why this review was needed

Problem

- War has intensified pressure on Ukraine’s healthcare infrastructure, workforce and supply capacity.
- International organisations and the Government of Ukraine define urgent priorities, but research may cover their economic provision unevenly.
- A direct comparison between policy priorities and the analysed scientific evidence was missing.

AIM OF THE STUDY

To identify gaps between practical recommendations on priority directions of economic provision for healthcare system development under military threats and the coverage of these directions within the analysed scientific literature.

Scope: publications retrieved from Scopus and PubMed for 2019–2024

Integrated policy-to-evidence mapping framework

01

Policy analysis

Eight institutional documents
Logical generalisation
10 priority AoCs

02

Bibliometric mapping

Scopus and PubMed
10 publication arrays (849 articles)
Biblioshiny and MCA

03

Content assessment

15 finance-focused articles
0–4 ordinal scale
Three independent assessors

04

Association analysis

Spearman rank correlation
45 pairwise comparisons
Holm-adjusted $p < 0.05$

MCA input: binary document–term matrix. Rows represented publications, columns represented selected terms, and values indicated term presence or absence.

Source: authors' analysis based on the article data

Selection of publications across 10 AoC searches

Aggregate counts across ten independently formed publication arrays



Scopus 8,930 | PubMed 12,334

7,460 duplicate records removed

Publication period 2019–2024
English or Ukrainian
War-related terms

246 excluded after full-text assessment

Studies included by priority area

AoC1	45	AoC6	158
AoC2	54	AoC7	38
AoC3	273	AoC8	67
AoC4	49	AoC9	22
AoC5	34	AoC10	109

Ten arrays were analysed with the Biblioshiny Factorial Analysis module.

Source: Fig. 1 and PRISMA counts reported in the article

Table 1

Institutional documents define a broad priority set

A plus sign indicates that a document addresses the corresponding Area of Concern

Priority AoC	D1	D2	D3	D4	D5	D6	D7	D8
1. Emergency and trauma			+					
2. Primary care	+	+	+	+	+	+	+	
3. Mental health			+					
4. Infectious disease		+	+				+	
5. Access to medicines	+	+	+		+		+	
6. Human capital			+	+	+	+	+	+
7. Medical logistics		+	+		+			
8. Stakeholder engagement		+	+		+	+		
9. Digitalisation			+		+		+	
10. Preparedness and resilience		+	+	+	+	+		

Documents

D1 Adult health needs assessment [4]

D2 WHO Emergency Appeal [5]

D3 Health financing review [3]

D4 Recovery priorities [7]

D5 Public Health Situation Analysis [8]

D6 Rural healthcare access [9]

D7 1000 days of war [6]

D8 Health labour market analysis [10]

Primary care and human capital appear across the widest range of institutional documents.

Source: Table 1 in the article

Ten areas require priority economic provision under military threats

01	Emergency and trauma healthcare
02	Primary care
03	Mental health
04	Infectious disease detection and outbreak prevention
05	Access to medicines
06	Human capital
07	Medical logistics and equipment
08	Volunteer, community and stakeholder engagement
09	Digitalisation of healthcare
10	**Health system preparedness and resilience**

Source: authors' analysis based on the article data

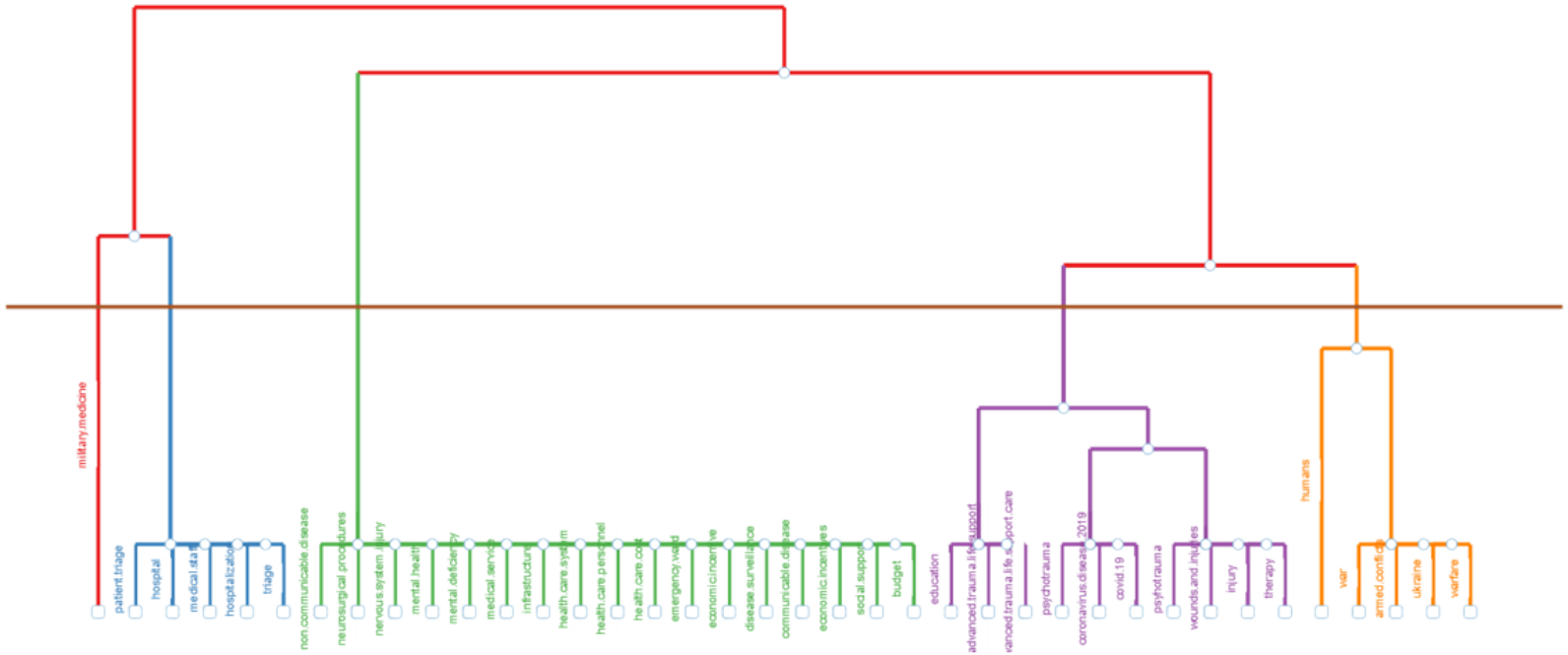
Figure 2

MCA revealed thematic subtopics

Example: topic dendrogram for emergency and trauma healthcare

How the clusters were formed

- Binary document–term matrix
- Low-frequency terms excluded
- Terms projected into a two-dimensional factorial space
- Clusters interpreted through constituent terms and representative documents



The dendrogram includes a cluster with economic incentives, costs and budget terms.

Source: Fig. 2 in the article

Economic subtopics appeared in only five thematic arrays

Area	Main thematic clusters identified through MCA	Economic cluster
AoC1	Military medicine; triage; trauma support; costs and budget	Yes
AoC2	Reform implementation; economic provision; displaced people	Yes
AoC3	Stress adaptation; refugees; surveys; PTSD and depression	No
AoC4	Outbreaks; antimicrobial stewardship; disease expansion	No
AoC5	Supply chain; essential medicines; distribution; reimbursement	Yes
AoC6	Healthcare quality; education; motivation; staff mental health	No
AoC7	Evacuation; triage; conflict delivery; crisis management	No
AoC8	Resource shortages; suppliers; financial support; development	Yes
AoC9	Machine learning; telemedicine; cybersecurity; AI	No
AoC10	Capacity; sustainability; reforms; financing; HR management	Yes

Economic clusters: AoC1, AoC2, AoC5, AoC8 and AoC10

Source: condensed presentation of Table 2 in the article

Five-point scale assessed depth and practical orientation

0	1	2	3	4
No information	Brief mention without supporting data	Limited or outdated qualitative and/or quantitative data	Extensive evidence with no or only general recommendations	**Extensive evidence with in-depth, actionable recommendations**

Objectivity safeguards All three authors assessed every publication independently using the same coding form. They discussed discrepancies and agreed the final score by consensus.

The indicator combines evidence depth with recommendation specificity to assess the overall completeness and practical applicability of coverage.

Source: authors' analysis based on the article data

Table 3

Coverage scores across 15 finance-focused publications

Cell values range from 0 (not addressed) to 4 (extensive evidence and actionable recommendations)

Publication	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Goniewicz et al.	2	2	2	1	1	2	1	3	0	2
Yakimets	3	0	0	0	1	0	1	1	0	1
Lytvyn et al.	0	4	0	2	2	0	0	2	0	2
Kuzior et al.	0	0	0	0	0	0	0	4	0	1
Zatonatska et al.	0	1	0	0	0	1	0	0	0	4
Rozanova et al.	0	0	1	3	0	2	1	1	0	1
Habicht et al.	0	2	0	0	1	1	0	1	1	4
Shalko et al.	1	4	0	1	2	4	1	3	0	4
Tulai et al.	0	1	0	4	0	1	1	0	2	4
da Costa et al.	0	1	0	1	0	0	0	0	0	1
Makhniuk et al.	2	2	1	1	1	1	1	1	1	4
Teremetskyi et al.	1	2	1	0	1	1	1	2	2	3
Seleznova et al.	1	1	4	0	1	2	1	0	0	2
Mironyuk et al.	1	1	1	0	1	0	0	0	0	1
Khanyk et al.	2	2	0	0	3	2	1	2	2	2
Total	**13**	**23**	**10**	**13**	**14**	**17**	**9**	**20**	**8**	**36**

Source: Table 3 in the article. A1–A10 correspond to AoC1–AoC10

Preparedness and resilience received the greatest attention



Highest score

36

Preparedness and resilience

Lowest coverage

8–9

Digitalisation and medical logistics/equipment

Source: total scores in Table 3 of the article

Two patterns of joint coverage remained significant

Spearman rank correlations with Holm correction for 45 pairwise comparisons

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
A1	**1.000**	0.180	0.375	-0.289	0.570	0.247	0.623	0.230	0.125	-0.043
A2	0.180	**1.000**	-0.026	0.164	**0.740**	0.328	0.082	0.388	0.312	0.598
A3	0.375	-0.026	**1.000**	-0.012	0.026	0.351	0.413	-0.084	-0.089	-0.124
A4	-0.289	0.164	-0.012	**1.000**	-0.161	0.161	0.224	0.005	-0.028	0.114
A5	0.570	**0.740**	0.026	-0.161	**1.000**	0.278	0.254	0.426	0.173	0.190
A6	0.247	0.328	0.351	0.161	0.278	**1.000**	**0.710**	0.211	0.172	0.425
A7	0.623	0.082	0.413	0.224	0.254	**0.710**	**1.000**	0.179	0.340	0.182
A8	0.230	0.388	-0.084	0.005	0.426	0.211	0.179	**1.000**	0.011	-0.018
A9	0.125	0.312	-0.089	-0.028	0.173	0.172	0.340	0.011	**1.000**	0.517
A10	-0.043	0.598	-0.124	0.114	0.190	0.425	0.182	-0.018	0.517	**1.000**

Primary care + access to medicines

ρ = 0.740

Human capital + medical logistics and equipment

ρ = 0.710

These coefficients describe co-coverage in publication content. They do not establish economic or causal relationships between the areas.

Source: Table 4 and Holm-adjusted interpretation reported in the article

The results answer the three research questions directly

01

Priority areas

Ten AoCs were identified from institutional recommendations. They span service delivery, workforce, supplies, digital capacity and system resilience.

02

Coverage gaps

Economic themes appeared in five thematic arrays. Among the 15 finance-focused articles, digitalisation and medical logistics/equipment received the lowest scores.

03

Joint-coverage patterns

Primary care co-occurred with access to medicines. Human capital co-occurred with medical logistics and equipment. Both patterns reflect publication content.

Source: authors' analysis based on the article data

Findings apply to the analysed publication corpus

01 Database scope

Only accessible publications indexed in Scopus and PubMed entered the analysis.

02 National evidence

Ukrainian studies outside these databases were not included in the automated thematic arrays.

03 Sample size

Correlation analysis used 15 finance-focused publications. Spearman correlation and Holm adjustment reduced, but did not remove, this limitation.

04 Expert judgement

Three authors independently applied predefined criteria, yet some interpretive subjectivity may remain.

The identified gaps characterise the retrieved corpus and should not be generalised to all international scientific literature.

Source: authors' analysis based on the article data

CONCLUSIONS

Policy priorities are broader than their economic coverage in the analysed research corpus

01 The review identified 10 priority areas for economic provision under military threats.

02 Preparedness and resilience received the deepest coverage. Digitalisation and medical logistics/equipment received the least.

03 The study offers a reproducible framework for comparing policy priorities with thematic scope, evidence depth and recommendation specificity.

04 Future research should include additional databases, larger samples and country-specific sources, with closer analysis of financing mechanisms and measurable outcomes.

Thank you · Questions and discussion