



Identification of Factors Influencing Health-Oriented Interactions between Iran and Iraq in Border Crisis Conditions with an Emphasis on Health Diplomacy

Ayoub Menati¹

¹ Assistant Professor of Regional Studies, Department of Law and Political Science, Faculty of Literature and Humanities, Ilam University, Ilam, Iran

Abstract:

Introduction: Cross-border health challenges between neighboring countries require effective cooperation mechanisms, particularly during crises such as mass gatherings, epidemics, and security disruptions. Despite the growing importance of health diplomacy between Iran and Iraq, especially during border crises, systematic, evidence-based studies identifying the key determinants of effective health-oriented interactions remain limited. This study aimed to identify and prioritize the factors influencing health-oriented interactions between Iran and Iraq during border crises to support evidence-based health diplomacy policymaking.

Methods: This applied study employed a mixed-methods approach with a sequential exploratory design. In the qualitative phase, semi-structured interviews were conducted with 15 experts and policymakers in border health using purposive sampling, and the data were analyzed through thematic analysis. In the quantitative phase, a researcher-developed questionnaire was completed by 20 specialists, and multi-criteria decision-making analysis was performed using the TOPSIS method.

Results: The qualitative phase identified 32 key factors, which were organized into four main thematic domains. Subsequent quantitative analysis using the TOPSIS method prioritized these factors and revealed that five factors achieved the highest rankings, including the development of joint health crisis protocols and rapid health data exchange systems.

Conclusion: Findings indicate that integrating policy–governance measures with infrastructure–operations is essential to strengthen border health security during crises. A joint crisis management framework and a pilot data exchange system at key border points are recommended.

Keywords: Health Diplomacy, International Cooperation, Border Health, Crisis Management

Article History:

Received: 20 September 2025

Accepted: 20 June 2026

Please cite this paper as:

Menati A. Identification of Factors Influencing Health-Oriented Interactions between Iran and Iraq in Border Crisis Conditions with an Emphasis on Health Diplomacy. *Health Man & Info Sci.* 2026; 13(2): 221-231. doi: 10.30476/jhmi.2026.108815.1319.

*Correspondence to:

Ayoub Menati,
Assistant Professor of Regional
Studies, Department of Law and
Political Science, Faculty of
Literature and Humanities, Ilam
University, Ilam, Iran
Email: a.menati@ilam.ac.ir

Introduction

Health diplomacy, as one of the emerging subfields of multilateral diplomacy, refers to the use of foreign policy tools and frameworks to achieve public health goals while simultaneously advancing the strategic interests of nations (1). In the third millennium, this approach has become one of the key components of human security and the

resilience of health systems against crises (2). The transnational nature of many health threats, from communicable diseases to the impacts of climate change, has shown that geographical borders do not prevent the spread of hazards, and the establishment of international cooperation and coordination mechanisms is an unavoidable necessity (3).

The Middle East region, and particularly the 1,458-kilometer border between Iran and Iraq, is a

prominent example of complex geopolitical and health environments. This boundary, due to the high volume of human movement resulting from trade, pilgrimage, labor migration, and large-scale religious events such as Arbäeen, is considered one of the highest-risk corridors for the transmission of communicable diseases in the region (4). Arbäeen is one of the largest annual religious mass gatherings globally, during which millions of pilgrims—primarily traveling on foot—from Iran and other countries converge on the city of Karbala in Iraq. This mass movement generates substantial cross-border public health challenges, including communicable disease surveillance and control, provision of emergency medical services, crowd health management, and the need for coordinated health system responses between Iran and Iraq. At the same time, structural differences in the two countries' health systems, unequal development of border health infrastructure, and recurrent crisis-inducing events—such as armed conflicts, epidemics, and environmental hazards—have intensified the demand for effective and institutionalized health cooperation. In particular, the regional instability caused by the ISIS (Islamic State of Iraq and Syria) conflict, alongside recurrent outbreaks of communicable diseases and climate-related health risks, has further exposed vulnerabilities in existing border health coordination mechanisms (5, 6).

International evidence and successful experiences in other crisis-prone regions, for instance, the health interventions following the “Good Friday Agreement” in Northern Ireland, have demonstrated that health diplomacy, by integrating public health capacities and foreign policy, can create new pathways for resolving disputes, facilitating inter-organizational coordination, and ensuring the delivery of vital services even under high-tension conditions (7, 8). However, comparable institutionalized and long-term frameworks have not yet been systematically developed or evaluated in the context of health-oriented interactions between Iran and Iraq, particularly under border crisis conditions (9).

Multiple challenges have contributed to this structural weakness, including inconsistencies in epidemic monitoring and response protocols, limitations in access to data exchange technologies, the dependence of logistical routes on political conditions, and the lack of stable communication lines at both technical and

diplomatic levels (8, 10). Moreover, broader macro-political factors—such as economic sanctions and regional geopolitical pressures can disrupt the supply chain of essential medicines, medical equipment, and emergency resources on both sides of the border, thereby further complicating coordinated health responses (11, 12).

Recent developments, such as “digital health diplomacy,” have enabled the use of information and communication technology tools to reduce geographical and administrative gaps and can improve the efficiency of rapid epidemiological data exchange and early coordination (13, 14). Likewise, interdisciplinary approaches such as “brain health innovation diplomacy,” which emphasize the convergence of scientific and policymaking domains, can serve as inspirational models for developing hybrid frameworks in border crisis management (15, 16).

Despite the expanding literature on health diplomacy at the global level, a critical knowledge gap remains regarding the systematic identification and empirical prioritization of factors that shape health-oriented interactions between Iran and Iraq during border crises. Existing studies are often descriptive, fragmented, or policy-oriented, and rarely integrate expert-based qualitative insights with quantitative prioritization techniques. This gap limits the development of evidence-based, operationally feasible, and context-sensitive health diplomacy strategies for border crisis management.

Therefore, the present study aims to identify and analyze the key determinants of health-oriented interactions between Iran and Iraq under border crisis conditions using a mixed-methods approach grounded in the theoretical framework of health diplomacy. By combining qualitative thematic analysis with quantitative multi-criteria decision-making, this study seeks to develop a conceptual and operational model that can inform policymakers and practitioners in strengthening cross-border health cooperation and crisis preparedness between the two countries.

Materials and Methods

This study was applied in terms of purpose and adopted a mixed-methods (qualitative–quantitative) approach in terms of nature and methodology, implemented in two sequential phases using a sequential exploratory design. The first phase, conducted qualitatively using an in-

depth thematic analysis approach, focused on identifying the determinants of health-oriented interactions between Iran and Iraq under border crisis conditions, with an emphasis on health diplomacy. The second phase was quantitative, in which the identified factors were prioritized using the multi criteria decision making model known as TOPSIS (Technique for Order Preference by Similarity to Ideal Solution).

Qualitative Phase

In the qualitative phase, the study population included health policymakers, border health managers, members of national crisis response committees, provincial health officials in border areas, and experts from international organizations active in Iran and Iraq, all of whom had direct experience in managing border health crises. Sampling was purposive and complemented by the snowball technique, and interviews continued until theoretical saturation was achieved. A total of 15 participants were recruited, each with a minimum of five years of relevant professional experience in border health or crisis management.

The data collection instrument in this phase was a semi structured interview guide (not the interview itself), which was developed based on a systematic review of relevant literature and expert consultation. The interview guide included open ended questions covering four main domains: (1) policy structures and governance mechanisms, (2) information flow and inter organizational coordination, (3) operational challenges and barriers at border points, and (4) opportunities and recommendations for improving health-oriented interactions.

With written informed consent, all interviews were audio recorded and transcribed verbatim. Each interview lasted between 45 and 75 minutes, depending on the participant's experience and the depth of discussion. Data analysis was conducted using a deductive-inductive thematic analysis approach, including open coding, categorization of codes into sub themes, and abstraction into main themes.

To enhance the rigor and trustworthiness of the qualitative findings, the initial coding process and emerging themes were independently reviewed by a qualitative research expert with experience in health policy research. Any discrepancies were discussed until consensus was reached. In addition, member checking, peer debriefing, and data triangulation were applied to strengthen credibility and dependability.

Quantitative Phase

In the quantitative phase, the study population consisted of elites and specialists in the field of border health in Iran and Iraq who were familiar with health diplomacy structures and were active at managerial or operational levels. Purposive expert sampling was applied, and 20 experts were selected to participate in the prioritization process.

A researcher developed questionnaire was designed based on the factors extracted from the qualitative phase. Participants were asked to evaluate each factor according to five decision making criteria:

- (1) strategic importance in enhancing health-oriented interactions,
- (2) potential effectiveness in border crisis conditions,
- (3) feasibility of implementation considering available resources,
- (4) sustainability of impact over time, and
- (5) alignment with bilateral or regional policies and agreements.

Responses were scored using a five-point Likert scale ranging from "very weak" (1) to "very strong" (5).

The prioritization of factors was performed using the TOPSIS multi criteria decision making method. The analytical steps included: constructing the decision matrix (factors as alternatives and criteria as evaluation measures), normalizing the data, assigning weights to criteria based on the mean expert scores, determining positive and negative ideal solutions, calculating the Euclidean distance of each factor from the ideal solutions, and computing the relative closeness coefficient (C_i) to rank the factors. Data analyses were conducted using Microsoft Excel and MATLAB software.

Ethical Considerations

This study was approved by the Ethics Committee of Ilam University (Ethics code: IR.ILAM.REC.1404.038). Before data collection, the study objectives, procedures, and participants' rights were clearly explained. Written informed consent was obtained from all participants. Participation was voluntary, confidentiality and anonymity were strictly maintained, and participants were informed of their right to withdraw from the study at any stage without any consequences. All collected data were used solely for research purposes.

Results

Qualitative Findings

The qualitative findings are presented below through integrated narrative descriptions supported by direct verbatim quotations from participants. From the interviews conducted with the 15 experts in the qualitative phase, a total of 32 key factors influencing health-oriented interactions between Iran and Iraq under border crisis conditions were identified. Through open coding and a deductive–inductive thematic analysis process, these factors were organized into sub-themes and main themes. The analysis resulted in four overarching themes, each encompassing multiple sub-themes and factors, which together explain the multidimensional nature of health-oriented cross-border interactions in crisis situations.

In the first phase, the participants' mean age was 44.2 years with a standard deviation of 5.8, and their mean professional experience was reported as 12.7 years (± 4.1). The gender composition comprised 5 women (33.3%) and 10 men (66.7%). Regarding educational level, 8 participants (53.3%) held a master's degree and 7 (46.7%) held a doctoral degree. Participants in this phase represented a diverse range of expertise, including border health (4), epidemiology (3), crisis management (3), international health relations (2), and health policymaking (3).

In the second phase, the participants' mean age was reported as 46.5 years with a standard deviation of 6.3, and their mean work experience was 15.1 years (± 5.2). This group comprised 7 women (35%) and 13 men (65%). In terms of education, 12 participants (60%) held a doctoral degree and 8 (40%) had a master's degree. Their fields of expertise included health management (6), public policy (4), epidemiology (5), international health (3), and work in international organizations (2). The complete demographic characteristics for both phases are presented in Table 1.

The thematic analysis was conducted in a deductive–inductive manner: initially extracting initial codes from the interview transcripts, then clustering similar and related codes into sub-themes, and finally shaping the main themes as the

overarching framework. This structure enabled a multi-level explanation of the factors and clarified the pathway from raw data to a conceptual model.

The thematic analysis resulted in four core overarching themes: health governance and policymaking, infrastructure and resources, border operational and executive processes, and socio–cultural contexts—which formed the primary analytical framework of the study. In addition, several cross cutting thematic domains, including experiences and lessons learned, international support and coordination, risk management and prevention, psychosocial support, and technology and innovation, emerged as supportive dimensions contributing to the overall structure of the identified 32 factors. Participants emphasized that the absence of formalized governance mechanisms and coherent health diplomacy frameworks between Iran and Iraq significantly undermines coordinated responses during border health crises. Many interviewees noted that health cooperation is not guided by stable institutional arrangements, which leads to delays, ambiguity in responsibilities, and inconsistent decision-making during emergencies. One participant explained that “lack of unified protocols between Iranian and Iraqi health authorities causes delays and confusion during emergencies” (Participant 7, Health Policymaker). Another interviewee highlighted that existing health interactions often rely on informal and short-term arrangements rather than institutionalized cooperation, stating that “health cooperation often depends on temporary agreements and personal connections rather than stable institutional arrangements” (Participant 3, International Health Expert). Overall, these accounts indicate that strengthening institutional health governance and formal health diplomacy structures is essential for improving coordinated cross-border crisis responses.

Inadequate and unequal infrastructure across border regions was repeatedly identified as a major barrier to effective health-oriented cooperation between Iran and Iraq. Participants referred to significant deficiencies in border health facilities, including quarantine centers, diagnostic laboratories, and the availability of trained human resources.

Table 1: Demographic characteristics of participants in the two research phases

Phase	Number	Gender (Female/Male)	Mean Age ± SD	Mean Work Experience ± SD	Education Level (%)	Field of Expertise or Current Position
Identification Phase (Interviews)	15	5 women (33.3%), 10 men (66.7%)	44.2 ± 5.8	12.7 ± 4.1 years	Master's (53.3%), Doctorate (46.7%)	Border health (4), Epidemiology (3), Crisis management (3), International health relations (2), Health policymaking (3)
Ranking Phase (TOPSIS)	20	7 women (35%), 13 men (65%)	46.5 ± 6.3	15.1 ± 5.2 years	Doctorate (60%), Master's (40%)	Health management (6), Public policy (4), Epidemiology (5), International health (3), International organizations (2)

According to one participant, “border quarantine centers are not equally equipped, and this imbalance seriously affects joint crisis management” (Participant 12, Border Health Manager). Another expert emphasized that even when there is political willingness to cooperate, operational capacities remain constrained, noting that “even with political willingness, the lack of shared laboratory facilities limits effective collaboration” (Participant 5, Epidemiologist). These findings highlight the critical role of equitable infrastructure development and shared resources in enabling effective cross-border health collaboration.

Participants also reported considerable weaknesses in operational coordination and executive processes at border points, particularly with respect to information exchange and joint preparedness activities. Several interviewees pointed to the absence of real-time data-sharing systems, which hinders timely and evidence-based decision-making during health emergencies. One participant stated that “there is no real-time data exchange system, so decisions are often made too late” (Participant 9, Crisis Management Expert). Another noted the reactive nature of current practices, explaining that “joint drills usually begin after a crisis has already escalated” (Participant 1, Border Operations Officer). These findings suggest that enhancing structured operational coordination, conducting regular joint exercises, and establishing integrated communication systems are necessary to strengthen border health crisis management.

Finally, socio-cultural factors were identified as influential determinants of public compliance and the effectiveness of cross-border health interventions. Participants consistently emphasized the importance of public trust, cultural sensitivity, and engagement with local and community leaders in border regions. One interviewee observed that “people in border regions trust local and religious leaders more than official health statements” (Participant 14, Community Health Expert). Another participant warned that neglecting cultural considerations can undermine health measures, stating that “ignoring cultural sensitivities leads to resistance against cross-border health measures” (Participant 6, Public Health Official). These insights underscore the need to incorporate socio-cultural contexts into the design and implementation of health diplomacy initiatives and border health policies.

Quantitative Findings

In total, 126 initial codes were extracted from the interview transcripts, which were subsequently refined and integrated into 32 final factors organized under four main themes. The 32 factors identified in the qualitative phase were prioritized by 20 experts in health diplomacy and border crisis management using the TOPSIS method, based on five key criteria: strategic importance, potential effectiveness, feasibility of implementation, sustainability of impact, and policy alignment. After constructing the decision matrix and normalizing the data, weights were assigned to the criteria, and the distance of each factor from the positive and negative ideal solutions was calculated. The relative closeness coefficient (C_i)

was then obtained, and the final ranking of the factors was determined based on this coefficient. The results revealed that the five factors development of joint protocols for health crises, rapid health data exchange system, multinational rapid response teams, harmonization of border health regulations, and equipping border quarantine centers held the highest priorities. Data analysis showed that these factors not only simultaneously achieved the top scores in strategic importance and potential effectiveness, but also

ranked highly in feasibility, sustainability, and policy alignment, underscoring their urgent and operational relevance in managing border health crises.

Table 2: Main themes, sub-themes, and factors identified as influencing health-oriented interactions between Iran and Iraq under border crisis conditions

Main Theme	Sub-Themes	Factors (32 items)
Health Governance and Policymaking	Coordinated policymaking, formal health diplomacy, shared legal frameworks, interactions with international organizations	1. Existence of joint protocols for border health crises 2. Stability of diplomatic relations between the two countries in the health sector 3. Alignment of border health laws and regulations 4. Commitment to WHO agreements
Infrastructure and Resources	Physical infrastructure, equipment and technology, specialized human resources, sustainable funding	5. Access to well-equipped border quarantine centers 6. Availability of joint or equivalent laboratory systems 7. Patient transportation infrastructure at the border 8. Joint financial resources for crisis management 9. Trained medical personnel for rapid response
Border Operational and Executive Processes	Information exchange systems, training and drills, inter-organizational coordination, rapid response protocols	10. Immediate data exchange system between the two countries 11. Joint drills for combating communicable diseases 12. Coordination between health ministries and border organizations 13. Multinational rapid response teams 14. Continuous border monitoring of passenger movements 15. Unified process for reporting suspected cases
Socio-Cultural Contexts	Cultural convergence, mutual trust, public awareness, local community participation	16. Public trust in the counterpart's health institutions 17. Awareness of border populations about communicable diseases 18. Role of local and religious leaders in information dissemination 19. Cultural sensitivity in delivering health services 20. Active participation of border NGOs
Experiences and Lessons Learned	Past epidemic management, event documentation, use of comparable experiences	21. Utilization of lessons from previous epidemics such as COVID-19 22. Written recording and analysis of past incidents 23. Comparing experiences with similar regional borders
International Support and Coordination	Cooperation with international bodies, securing foreign assistance	24. Involvement of international relief organizations in border crises 25. Use of WHO technical and technological assistance
Risk Management and Prevention	Risk assessment, vaccination, movement control	26. System for assessing risks of regional diseases 27. Border vaccination programs 28. Restriction or management of entry-exit during outbreaks
Psychosocial Support	Supportive measures for personnel and border populations	29. Psychological support services for frontline staff 30. Stress management training for border populations
Technology and Innovation	Use of smart systems, digitalization of services	31. Use of shared digital databases 32. Use of rapid digital diagnostic tools at the border

Discussion

Based on the results of this study, the development of joint health crisis protocols together with a rapid health data exchange system identified as the top priority acts as a “common language” between Iran and Iraq, which not only harmonizes actions but also prevents duplication of efforts and contradictory decisions. In crises such as outbreaks of communicable diseases, even a few hours’ delay in data exchange can trigger a new wave of disease transmission. This finding aligns with the work of Kickbusch & Liu (2022), who emphasized the necessity of linguistic and structural integration in global health governance (1), and with the results of Godinho et al. (2022), which highlight the purposeful use of digital technologies as essential to enhancing transparency and accelerating decision-making within the framework of “digital health diplomacy (14).”

The prioritization results showed that the five top-ranked factors form the strategic–policy core of interventions, simultaneously achieving high scores in strategic importance, potential effectiveness, and alignment with existing policies. Such integration minimizes political and operational barriers and increases the likelihood of implementing recommendations. This analysis is consistent with Chattu et al. (2019), who stressed the importance of focusing bilateral/multilateral agreements on shared priorities in human security (17), and with Chattu et al. (2022), who, within the concept of “global digital health diplomacy,” emphasized linking the digital dimension with overarching health policies to reduce political gaps (2).

Other findings of this research indicate that investing in hardware-related factors without policy harmonization leads to underutilization of capacities; for example, equipping quarantine centers alone cannot fully guarantee disease control without unified regulations. This conclusion corresponds with Chattu et al. (2023), who stressed the integration of policymaking and infrastructure to ensure equity in access to medicines (16), and with Adams et al. (2008), who demonstrated that health globalization and the expansion of biosecurity frameworks require harmonized regulations between countries to fully leverage technical infrastructure (11).

According to the identified priorities, low-cost, high-impact, and rapidly implementable measures such as border vaccination protocols can generate immediate effects along with building international trust, especially in the early stages of crises. This approach is in line with Boujnah (2022), who described the African experience of leveraging swift, coordinated actions as a form of soft power to consolidate broader cooperation in response to COVID-19(5).

The prioritization results also showed that lower-ranked factors, such as coordination of NGO rapid response, are less about inherent importance and more linked to challenges of execution, the need for extensive resources, and multi-tiered coordination. This interpretation is similar to Chattu et al. (2021), who noted that the complexity of multisectoral negotiations and the predominance of economic interests delay the implementation of essential actions (18), and to Thokwane et al. (2021), who in Botswana identified weaknesses in capacity-building and the lack of sustained partnerships as the primary reasons for the long-term failure of intergovernmental and private collaborations (8).

According to the key findings of this research, a combined policy package of “software” and “hardware” components, including laws, training, and regulatory alignment alongside technical infrastructure and border equipment, offers the highest efficiency in securing border health. This approach is consistent with Falqui et al. (2024), who found that in fragile human settings, applying health diplomacy at both the policy-making and operational levels increases intervention success (9), and with Ribeiro & Ventura (2019), who attributed the success of South–South cooperation to the simultaneous implementation of soft and hard measures to improve health equity (3).

Strengths and limitations

Although these prioritization results for factors influencing health-oriented interactions between Iran and Iraq in border crises can serve as a basis for formulating joint policies and practical interventions, limitations such as the small sample size in both qualitative and quantitative phases, the focus on selected expert perspectives without full coverage of all border provinces, and the time-sensitive nature of crisis conditions may affect the generalizability of the

findings. Practically, it is recommended that national and regional bodies use the five identified top-priority factors to develop a joint framework for managing border health crises, and pilot a health data exchange system at major border crossings. For future research, similar studies with broader geographical scope, integration of field data with policy simulations, and examination of the long-term effects of the proposed interventions on health and border security indicators are suggested to enable the development of a comprehensive and sustainable operational model

Conclusion

The results of this study demonstrated that enhancing border health and security between Iran and Iraq during crises requires an integrated approach that simultaneously focuses on “software” factors such as developing joint protocols, harmonizing regulations, and establishing rapid data exchange mechanisms and “hardware” factors such as equipping quarantine centers and forming multinational rapid response teams. The TOPSIS prioritization indicated that policy-driven and process-harmonizing actions take precedence over purely infrastructural measures due to their high impact, feasibility, and alignment with overarching policies; however, complementing these with physical infrastructure development is essential to sustain outcomes. These findings underscore that only by combining soft and hard interventions, and through the active participation of bilateral and multilateral actors, can a sustainable model for managing border health crises and strengthening regional health diplomacy be achieved.

Acknowledgments

The author sincerely appreciates all individuals who directly or indirectly contributed to the implementation of this study.

Authors' Contribution

All stages of the research, including conceptualization, study design, data collection and analysis, drafting of the initial manuscript, and final editing, were carried out entirely by Author A.

Ethics Approval

This study was approved by the Ethics Committee of Ilam University (Ethics code: IR.ILAM.REC.1404.038). Before commencing the study, the objectives and procedures were fully explained to the participants, and written informed consent was obtained. The confidentiality of participants' information was assured, and the collected data were used solely for research purposes.

Conflict of Interest

There are no conflicts of interest.

References

- 1- Kickbusch I, Liu A. Global health diplomacy-reconstructing power and governance. *Lancet*. 2022;399(10341):2156–66.
- 2- Chattu VK. "Digital global health diplomacy" for climate change and human security in the Anthropocene. *Health Promot Perspect*. 2022;12(3):277-281.
- 3- Ribeiro H, Ventura DFL. Health Diplomacy and Global Health: Latin American perspectives. *Rev Saúde Pública*. 2019;53:37.
- 4- Aloosh M. Iran deal and global health diplomacy. *The Lancet Global Health*. 2015;3(12):e744.
- 5- Boujnah H. Health diplomacy in Africa-opportunities post-COVID-19. *Pan Afr Med J*. 2022;43:91.
- 6- Lizinfield DI, Fereidouni DM, Pshenichnaya DN, Abuova DG, Shirzadi DMR, Khaleel DHA, et al. Crimean-Congo Hemorrhagic Fever Modeling Based on Climate Variables in Iran, Iraq, Kazakhstan, Russia and Turkey (1999-2022). *International Journal of Infectious Diseases*. 2025;152:107538.
- 7- Lawler M, Sullivan R, Abou-Alfa GK, McCloskey K, Keatley D, Feighan J, et al. Health diplomacy in action: The cancer legacy of the Good Friday Agreement. *Journal of Cancer Policy*. 2023;38:100448.
- 8- Thokwane K, Baines LS, Mehjabeen D, Jindal RM. Global health diplomacy: Provision of specialist medical services in the Republic of Botswana. *Surgeon*. 2022;20(4):258–61.
- 9- Falqui L, Li F, Xue Y. Global health diplomacy in humanitarian action. *Confl Health*. 2024;18(1):46.
- 10- Evaborhene NA, Oga J. Global health diplomacy in a transactional era. *The Lancet*. 2025;405(10484):1049.

- 11- Adams V, Novotny TE, Leslie H. Global health diplomacy. *Medical anthropology*. 2008; 27(4):315-23.
- 12- Dutta A. Incorporating Evidence-Based Medicine into health diplomacy: A strategic imperative for equitable global health. *Ethics, Medicine and Public Health*. 2025;33:101175.
- 13- Godinho MA, Liaw S-T. Chapter 9 - Digital health diplomacy, cooperation, and harmonization for global digital health maturity. In: Liaw S-T, Jonnagaddala J, Godinho MA, Wilkins-Wong ZSY, editors. *Digital Health Maturity: Quality, Interoperability, and Innovation*: Academic Press; 2026. p. 221–40.
- 14- Godinho MA, Martins H, Al-Shorbaji N, Quintana Y, Liaw ST. "Digital Health Diplomacy" in *Global Digital Health? A call for critique and discourse*. *J Am Med Inform Assoc*. 2022;29(5):1019–24.
- 15- Ternes K, Iyengar V, Lavretsky H, Dawson WD, Booi L, Ibanez A, et al. Brain health Innovation Diplomacy: a model binding diverse disciplines to manage the promise and perils of technological innovation. *Int Psychogeriatr*. 2020;32(8):955–79.
- 16- Chattu VK, Singh B, Pattanshetty S, Reddy S. Access to medicines through global health diplomacy. *Health Promot Perspect*. 2023;13(1):40–6.
- 17- Chattu VK, Knight AW, Kevany S, Sehovic AB. Global health diplomacy, health and human security: The ascendancy of enlightened self-interest. *J Educ Health Promot*. 2019;8:107.
- 18- Chattu VK, Pooransingh S, Allahverdipour H. Global health diplomacy at the intersection of trade and health in the COVID-19 era. *Health Promot Perspect*. 2021;11(1):1–4.

Table 3: Ranking results of factors influencing health-oriented interactions between Iran and Iraq under border crisis conditions using the TOPSIS method

Factor	Strategic Importance (Rank)	Potential Effectiveness (Rank)	Feasibility of Implementation (Rank)	Sustainability of Impact (Rank)	Policy Alignment (Rank)	S_i^+	S_i^-	C_i	Overall Rank
Development of joint protocols for health crises	0.182 (1)	0.176 (2)	0.171 (3)	0.169 (4)	0.185 (1)	0.097	0.281	0.743	1
Rapid health data exchange system	0.179 (2)	0.172 (4)	0.166 (4)	0.164 (5)	0.178 (3)	0.104	0.272	0.724	2
Multinational rapid response teams	0.176 (3)	0.178 (1)	0.164 (5)	0.166 (3)	0.176 (4)	0.112	0.265	0.703	3
Harmonization of border health regulations	0.171 (4)	0.168 (6)	0.168 (2)	0.161 (6)	0.182 (2)	0.109	0.259	0.704	4
Equipping border quarantine centers	0.169 (5)	0.170 (5)	0.177 (1)	0.155 (7)	0.173 (6)	0.115	0.253	0.687	5
Establishing emergency communication lines between ministries	0.167 (6)	0.164 (8)	0.162 (6)	0.152 (9)	0.170 (8)	0.123	0.249	0.669	6
Joint training of border health personnel	0.165 (7)	0.160 (9)	0.155 (8)	0.158 (8)	0.168 (9)	0.126	0.242	0.657	7
Establishing joint health inspection teams	0.162 (8)	0.157 (10)	0.152 (9)	0.149 (10)	0.165 (10)	0.131	0.239	0.646	8
Development of border IT infrastructure	0.160 (9)	0.165 (7)	0.149 (11)	0.146 (12)	0.162 (12)	0.134	0.232	0.634	9

Factor	Strategic Importance (Rank)	Potential Effectiveness (Rank)	Feasibility of Implementation (Rank)	Sustainability of Impact (Rank)	Policy Alignment (Rank)	S _i ⁺	S _i ⁻	C _i	Overall Rank
Creating a comprehensive border health information bank	0.158 (10)	0.153 (12)	0.147 (12)	0.144 (13)	0.160 (13)	0.137	0.229	0.626	10
Coordinating quarantine operations between the two countries	0.155 (12)	0.150 (13)	0.150 (10)	0.141 (14)	0.158 (14)	0.142	0.224	0.612	11
Provision of joint personal protective equipment	0.153 (13)	0.149 (14)	0.144 (13)	0.140 (15)	0.156 (15)	0.146	0.219	0.600	12
Creating border vaccination protocols	0.150 (14)	0.146 (15)	0.142 (14)	0.137 (16)	0.154 (16)	0.150	0.215	0.589	13
Exchange of health experts and specialists	0.148 (15)	0.145 (16)	0.139 (15)	0.134 (17)	0.151 (17)	0.153	0.210	0.578	14
Conducting joint health crisis drills	0.146 (16)	0.144 (17)	0.137 (16)	0.133 (18)	0.150 (18)	0.155	0.207	0.572	15
Establishing a regional early warning system	0.144 (17)	0.142 (18)	0.135 (17)	0.131 (19)	0.148 (19)	0.158	0.202	0.561	16
Expanding cooperation with international organizations	0.142 (18)	0.140 (19)	0.133 (18)	0.129 (20)	0.146 (20)	0.160	0.198	0.553	17
Cooperation in joint epidemiological research	0.140 (19)	0.138 (20)	0.131 (19)	0.127 (21)	0.144 (21)	0.163	0.194	0.544	18
Creating joint vaccine production capacities	0.138 (20)	0.136 (21)	0.129 (20)	0.125 (22)	0.142 (22)	0.166	0.189	0.533	19
Standardizing laboratory protocols	0.136 (21)	0.134 (22)	0.127 (21)	0.123 (23)	0.140 (23)	0.168	0.186	0.525	20
Upgrading border surveillance systems	0.134 (22)	0.132 (23)	0.125 (22)	0.121 (24)	0.138 (24)	0.171	0.182	0.515	21
Public education in border communities	0.132 (23)	0.130 (24)	0.123 (23)	0.119 (25)	0.136 (25)	0.173	0.179	0.508	22
Information exchange in vector control	0.130 (24)	0.128 (25)	0.121 (24)	0.117 (26)	0.134 (26)	0.176	0.175	0.498	23
Coordinating patient movements	0.128 (25)	0.126 (26)	0.119 (25)	0.115 (27)	0.132 (27)	0.178	0.172	0.491	24

Factor	Strategic Importance (Rank)	Potential Effectiveness (Rank)	Feasibility of Implementation (Rank)	Sustainability of Impact (Rank)	Policy Alignment (Rank)	S _i ⁺	S _i ⁻	C _i	Overall Rank
across the border									
Creating joint food safety standards	0.126 (26)	0.124 (27)	0.117 (26)	0.113 (28)	0.130 (28)	0.181	0.168	0.481	25
Harmonizing food transport laws	0.124 (27)	0.122 (28)	0.115 (27)	0.111 (29)	0.128 (29)	0.183	0.165	0.474	26
Enhancing border healthcare capacities	0.122 (28)	0.120 (29)	0.113 (28)	0.109 (30)	0.126 (30)	0.186	0.161	0.464	27
Facilitating entry of humanitarian aid	0.120 (29)	0.118 (30)	0.111 (29)	0.107 (31)	0.124 (31)	0.188	0.157	0.455	28
Cooperation in monitoring shared animal diseases	0.118 (30)	0.116 (31)	0.109 (30)	0.105 (32)	0.122 (32)	0.191	0.154	0.446	29
Exchange of experiences in countering chemical threats	0.116 (31)	0.114 (32)	0.107 (31)	0.103 (33)	0.120 (33)	0.193	0.151	0.438	30
Creating a mobile crisis treatment system	0.114 (32)	0.112 (33)	0.105 (32)	0.101 (34)	0.118 (34)	0.196	0.147	0.429	31
Coordination of NGO rapid response programs	0.112 (33)	0.110 (34)	0.103 (33)	0.099 (35)	0.116 (35)	0.198	0.144	0.421	32