

RESEARCH ARTICLE

Deepening Social Inequalities in Health in the Maelstrom of War and Migration: A Multi-Criteria Approach

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Abstract

This study analyzes social inequalities in access to healthcare that emerge during periods of war and forced migration using a multi-criteria decision-making (MCDM) approach. The aim is to systematically assess the severity of inequalities that intensify during crises and to propose policy recommendations to reduce them. Based on a literature review, ten main categories of social inequalities in health were identified. To determine their relative weights, expert opinions were collected through an F-AHP questionnaire from six specialists in health management, psychology, sociology, behavioral sciences, and health economics. The analysis revealed that the most important inequalities in accessing healthcare services during war and forced migration are socioeconomic status, cultural and ethnic differences, and legal status. These findings highlight that disadvantaged socioeconomic groups, cultural and linguistic barriers, and uncertainties in legal identity significantly hinder access to essential health services. To mitigate these challenges, resource allocation in crisis settings should primarily focus on reducing such inequalities. Recommended strategies include providing financial support and social assistance to low-income immigrants, expanding cultural mediation services in healthcare institutions, and ensuring multilingual communication. Additionally, adopting a justice-based approach by guaranteeing a minimum level of healthcare for all immigrants, regardless of their legal status, is crucial for promoting equity in health access.

Keywords: health, war, migration, inequality, multi-criteria decision making

Öz

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Bu çalışmada, savaş ve zorunlu göç süreçlerinde sağlık hizmetlerine erişimde ortaya çıkan sosyal eşitsizliklerin çok kriterli karar verme (ÇKKV) yöntemiyle analiz edilmesi amaçlanmıştır. Çalışma, kriz durumlarında derinleşen sağlık eşitsizliklerini sistematik biçimde ağırlıklandırmayı ve bu eşitsizlikleri azaltmaya yönelik politika önerileri geliştirmeyi hedeflemektedir. Sağlıkta sosyal eşitsizlikler literatür taraması neticesinde 10 ana başlıkta belirlenmiştir. Eşitsizliklerin göreceli ağırlık skorlarının belirlenmesi için sağlık yönetimi, psikoloji, sosyoloji, davranış bilimleri ve sağlık ekonomisi alanlarından 6 uzmanın görüşleri F-AHP soru formu aracılığıyla toplanmıştır. Yöntemin ilgili hesaplamaları yapılarak sağlıkta sosyal eşitsizliklerin önem dereceleri belirlenmiştir. Analiz sonuçlarına göre, savaş ve zorunlu göç sürecinde sağlık hizmetlerine erişimde ortaya çıkan en önemli sosyal eşitsizlikler sırasıyla; sosyoekonomik durum, kültürel ve etnik farklılıklar ve yasal durum olarak tespit edilmiştir. Sağlık hizmetlerine erişimin artırılması için kaynak tahsisi öncelikli olarak bu eşitsizliklere yönlendirilmelidir. Düşük gelirli, yoksulluk sınırının altında yaşayan göçmenler için hibeler yoluyla finansal destek ve sosyal yardım mekanizmalarının güçlendirilmesi, sağlık kurumlarında kültürel arabuluculuk hizmetlerinin genişletilmesi, diller ve kültürler arasında iletişim kanallarının oluşturulması önemlidir. Ayrıca göçmenler için hukuki statüye bakılmaksızın asgari düzeyde sağlık hizmeti garantisi sağlanmalı, adalet temelli bir yaklaşım benimsenmelidir.

Anahtar Kelimeler: sağlık, savaş, göç, eşitsizlik, çok kriterli karar verme

Introduction

Wars and large-scale displacement, often referred to as migration, disrupt the fabric of society and cause serious physical and psychiatric problems among vulnerable populations. Disruptions to healthcare services during this crisis disproportionately impact marginalized groups such as low-income groups, ethnic minorities, and women (Fares & Puig-Junoy, 2021, p.7; Khalifeh et al., 2023, p.2). The destruction of healthcare infrastructure, the inability to provide basic healthcare services, and the general chaos that comes with war can lead to the collapse of healthcare systems in war-torn regions. Indeed, this leads to decreased patient care and increased mortality rates among displaced populations (Izquierdo-Condoy et al., 2025, p.3). Studies in the literature also confirm this view, demonstrating significant declines in the health status of individuals facing forced migration (Agbemenu et al., 2022, p.420; Crowley et al., 2024, p.306).

Accessibility to care is a critical determinant that directly affects health status. The concern is more aggravated in people who are in conflict or who are migrants. For example, Syrian refugees in Egypt face great difficulties in accessing care, while limited resources further complicate their healthcare needs (Fares & Puig-Junoy, 2021, p.7). Forcefully displaced individuals usually have poor health status compared to voluntary migrants. Research shows that forcedly displaced individuals are at higher risk of being affected by poor mental health due to stigmatisation and being socially ostracised in host societies (Frounfelker et al., 2023, p.310; Crowley et al., 2024, p.306). Moreover, in regions such as Ukraine, the pressure placed upon health systems by conflict severely affects access to healthcare services (Goniewicz et al., 2023, p.8). Global institutions believe that it is imperative to ensure equal access to healthcare in order to support resilience in war-affected places and among migrants (Yu & Meng, 2022, p.4).

These situations outlined above highlight the need to take into consideration not only immediate implications of conflict and displacement by arms, as well as disparities in allocation of healthcare resources, but also the general sociopolitical system

contributing to such inequalities. Indeed, social determinants of health, including such aspects as economic deprivation, educational status, and availability of support systems, significantly impact the health status of displaced population (Dawkins et al., 2020, p.3; Wenner et al., 2021, p.5). The current literature suggests a wide range of studies regarding social inequalities in terms of health. Khalifeh et al. (2023, p.12) noted that migrants in Lebanon often face barriers such as linguistic difficulties or legal issues, hindering them from accessing critical healthcare services. Hamilton et al. (2022, p.1245) and Lorini et al. (2020, p.1150) also suggest that people without official status in host countries often face difficulties in terms of achieving health insurance and receiving required medical attention. Refugees also often face traumatic experiences due to displacement, which in turn increases risks of developing negative circumstances such as stress disorders and depression. The fact that such individuals encounter disruption of support systems as well as difficulties adjusting to new, unfamiliar systems of medicine further exacerbates this picture (Frounfelker et al., 2023, p.310; Crowley et al., 2024, p.306). In cases of enforced displacement, maternal and reproductive health also decline, revealing yet another dimension of social disparities in terms of medical attention (Small et al., 2017, p.320). In cases of crises, children are subjected to difficulties such as malnutrition, low level of vaccinations, as well as interruptions in educational support, which leave permanent effects both in terms of physical and psychological status (Raharjo et al., 2022, p.30). Geographic remoteness, particularly in rural or distant places such as rural villages, limited access to basic care due to lack of nearby care resources. Forced accommodation and low infrastructure of medical facilities in camps increase inequality (Dzhush & Golovach, 2022, p.2). In countries that are subjected to long-lasting conflict, like Syria, the loss of transport infrastructure and healthcare centers has resulted geographical barriers, hence hindering access to vital services (Ekzayez et al., 2021, p.8). On the flipside, disruption of educational infrastructure in conflict zones leads to low-level health literacy. This is a vital aspect that hinders people's understanding of health needs or effective access to available services (Moeti et al., 2023, p.9). In particular, refugees face exacerbated

barriers in the access to healthcare, struggling with complex systems of host countries, whereby cultural and linguistic disparities further exacerbate barriers (Goniewicz et al., 2023, p.8). Refugees are also subjected to stigmatization and social discrimination associated with particular ethnic affiliations due to enforced seclusion, which directly influences their health status and access to services (Newaz & Riediger, 2020, p.280). Another factor contributing to increased social inequalities in health is the potential for individuals exposed to violence and instability during their developmental years to be at higher risk for a variety of health problems throughout their lives. This impacts their ability to effectively access healthcare for the rest of their lives (Owczarzak et al., 2022, p.1916). Long-term depression and anxiety, particularly those stemming from past trauma, directly impact individuals' willingness or ability to seek healthcare (Spytska, 2024, p.495). Another issue is the severely diminished capacity of healthcare systems in conflict zones. Access to healthcare is directly impacted by capacity. The destruction of healthcare infrastructure, lack of medical personnel, and the loss of basic resources limit the ability of healthcare systems to effectively meet the needs of the population (Goniewicz et al., 2023, p.8). Yemane et al. (2024, p.11) also claim in their work that in situations of conflict, health systems face critical difficulties, with many facilities failing to function due to either shortcomings of resources or direct attacks.

Various studies in the literature frequently emphasize the need to eliminate social inequalities in access to healthcare during crises and develop health policies that target the most vulnerable groups (Tang, 2024, p.456; Khalifeh et al., 2023, p.2; Fenny et al., 2019, p.292). Including communities affected by war and migration in the design and implementation of health strategies is vital to ensuring that their needs are adequately addressed (Oliveira et al., 2025, p.3; Murata & Kondo, 2020, p.200).

Given that quantitative data on health inequalities during war and forced migration are often scarce, expert-based evaluation becomes an essential tool to capture multidimensional and context-specific aspects of inequality. Therefore, obtaining

expert opinions ensures the inclusion of interdisciplinary perspectives, particularly when empirical data are limited or fragmented in crisis contexts (Büyükožkan & Çifçi, 2012, p.3005; Gedikli & Kocaman, 2025, p.15; Gavurova et al., 2023, p.8). Moreover, previous studies have also utilized the Fuzzy AHP method to evaluate complex and uncertain phenomena in health systems, such as health policy prioritization and healthcare service inequalities (Bozbura & Beskese, 2007, p.138; Gedikli & Kocaman, 2025, p.15; Sevkli et al., 2012, p.17; Ommame et al., 2025, p.14). Incorporating expert judgment through this approach allows for a systematic weighting of social inequalities in the absence of comprehensive quantitative datasets.

In this context, the aim of this study is to identify social inequalities in access to healthcare that emerge during war and forced migration and to determine their significance using multi-criteria decision-making methods. This study aims to systematically figure out health inequalities exacerbated by crises and to develop policy recommendations to reduce these inequalities.

Methodology

Type and Design of the Research

This study aims to degree of importance social inequalities in access to healthcare during war and forced migration processes using Fuzzy AHP, one of the MCDM methods. Indeed, the study design is descriptive and cross-sectional.

Determining Interventions and Criteria

Social inequalities in healthcare have been identified under 10 main headings as a result of a literature review. These are presented in Table 1, along with explanations and sources.

To determine the weights of these inequalities, 6 experts specializing in public health, health management, health policies, sociology, psychology, and law, and with experience in the research topic, conducted evaluations using F-AHP forms.

Table 1. Social inequalities in health

Abbreviations	Inequalities	Inequalities Explanations	References
BA	Barriers to Access	Language barriers, bureaucratic processes, security issues, and inadequate infrastructure make it difficult to access services.	Khalifeh et. al. 2023, p.2
SS	Socioeconomic Status	Income loss, unemployment, and economic vulnerability create inequalities in access to healthcare.	Dawkins et al., 2020, p.3; Wenner et al., 2021, p.5
GF	Geographical Factors	Conflict zones, refugee camps, and transportation difficulties create barriers to accessing healthcare.	Dzhus & Golovach, 2022, p.2; Ekzayez et al., 2021, p.8
GA	Gender and Age	Special health risks faced by women, children, and the elderly during war and migration processes.	Small et al., 2017, p.320; Raharjo et al., 2022, p.30
PE	Psychosocial Effects	The impact of trauma, stress, and social isolation on individuals' search for and use of healthcare services.	Frounfelker et al., 2023, p.310; Crowley et al., 2024, p.306
EHL	Education / Health Literacy	The impact of individuals' level of familiarity with the healthcare system, knowledge of their rights, and ability to use health-related information on their access to services.	Moeti et al., 2023, p.9; Goniewicz et al., 2023, p.8
CED	Cultural and Ethnic Differences	Barriers to accessing healthcare services created by discrimination, exclusion, and integration issues.	Newaz & Riediger, 2020, p.280; Goniewicz et al., 2023, p.8;
LE	Lifetime Effects	The exacerbation of chronic diseases and long-term health problems after war and migration.	Owczarzak et. al., 2022, p.1916; Spytska, 2024, p.495
HSC	Health System Capacity	The level of the host country's health infrastructure, human resources, and political will to respond to refugee health.	Yemane et. al. 2024, p.11; Goniewicz et al., 2023, p.8
LS	Legal Status	The determination of access to health services by legal statuses such as temporary protection, insurance, social security, and citizenship.	Hamilton et al. 2022, p.1245; Lorini et. al. 2020, p.1150

The experts were selected through a purposive sampling strategy, aiming to ensure diverse disciplinary perspectives relevant to the phenomenon of social health inequalities. Selection criteria included a minimum of ten years of professional or academic experience in areas directly related to health management, migration, or social policy, as well as previous involvement in research or policymaking on inequality and healthcare access (Palinkas et al., 2015, p.540).

Table 2. Expert details

Expert	Area of Expertise	Education Level	Title	Experience (years)
E1	Public Health	PhD	Prof. Dr.	20
E2	Health Management	PhD	Asst. Prof.	10
E3	Health Policies	Master	Bureaucrat	16
E4	Sociologist	PhD	Assoc. Prof.	11
E5	Psychology	PhD	Prof. Dr.	18
E6	Law	PhD	Assoc. Prof.	13

The experts were contacted through professional and academic networks based on their prior research or institutional experience related to health policy, migration, and social inequalities. Invitations were sent via institutional email addresses, participation was entirely voluntary, and written informed consent was obtained prior to data collection, in line with ethical research standards (Creswell & Poth, 2018).

These questionnaires consisted of questions based on pairwise comparisons of criteria formed from linguistic expressions such as equal, moderate, important, very important, and extremely important. Participants made their assessments according to importance levels from 1 to 9 in line with these questions. Detailed information about the experts is provided in Table 2.

Analysis of Data

Fuzzy AHP

AHP is a structured decision-making methodology widely used in various fields, including management, engineering, and education, to facilitate complex decision-making by breaking a problem into a hierarchy of subproblems that can be analyzed independently (Saaty, 2008, p.88). AHP allows decision makers to systematically evaluate multiple criteria and alternatives, allowing them to prioritize options according to their relative importance (Saaty, 2008, p.88). The human inclinations between the various alternatives are converted into equal, moderate, important, very important, or extremely important preferences using a nine-point scale (1–9) in the conventional AHP. To avoid bias, the AHP exclusively employs absolute scale values for assessments and the consequent priority. It is quite difficult for the decision-maker to clearly state their preferences using exact

numerical values. To provide accurate pairwise comparison evaluations since some of the evaluation criteria are subjective and qualitative in personality traits. Uncertain decision-making situations are unable to be effectively solved with the standard AHP. To avoid this restriction, which can deal with the ambiguity and imprecision of the service evaluation procedure. Interval or fuzzy evaluations are preferred for dealing with the ambiguity of the data involved in multi-criteria decision-making problems (Kumar & Kumar, 2008, p.4674).

Zadeh developed the fuzzy set theory to address uncertainty resulting from imprecision and ambiguity (Zadeh, 1965, p.340). The ability of fuzzy set theory to represent ambiguous data is one of its major contributions. This theory also enables programming and mathematical operators in the fuzzy domain. A class of objects with a range of membership grades is called a fuzzy set. A membership (characteristic) function that awards each object a membership grade ranging from zero to one defines such a set. Fuzzy logic is required for dealing with issues that are characterized by vagueness and imprecision, as demonstrated by the fact that human judgment on preferences is frequently ambiguous and difficult to estimate by definite numerical values (Büyüközkan & Çifçi, 2012, p.3006). A triangular fuzzy number (M), shown in Figure 1, can be denoted as a ($l/m, m/u$) or ($l/m/u$). The values l , m , and u are the smallest, most promising, and most significant possible values that may be used to define a fuzzy event, respectively. Each triangular fuzzy number has linear representations on all of its sides, allowing Eq. (1) to be used to construct its membership function (Yüksel & Dağdeviren, 2010, p.1273).

The selection of the F-AHP is directly aligned with the study's aim of identifying and prioritizing multidimensional social inequalities in healthcare during war and forced migration. These inequalities inherently involve subjective judgments and uncertain evaluations, as quantitative data are often limited in conflict-affected regions.

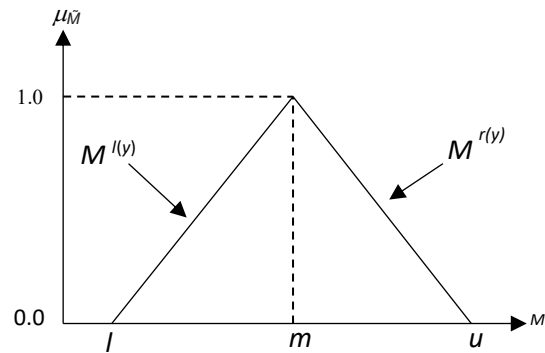


Figure 1. A triangular fuzzy number, M

The linear representation of the triangular fuzzy number according to the right and left membership degree values is given in Equation 1.

$$\mu(x|M) = \begin{cases} 0, & x < l \\ (x-l)/(m-l), & l \leq x \leq m \\ (u-x)/(u-m), & m \leq x \leq u \\ 0, & x > u \end{cases} \quad (1)$$

A group of decision-makers is organized to evaluate the criteria and attributes as linguistic variables with the agreement of all their numbers. (Xiaoqiong et al., 2004, p.5233). The decision-makers develop Pairwise comparison matrices using the scale given in Table 3 (Buckley, 1985, p.238).

Table 3. Triangular fuzzy scales and linguistic expressions

Linguistic term	Abbreviation	Relative Importance	Fuzzy scales	Inverse fuzzy scales
Equal	E	1	1,1,1	(1/1, 1/1, 1/1)
Moderate	M	3	2,3,4	(1/4, 1/3, 1/2)
Important	I	5	4,5,6	(1/6, 1/5, 1/4)
Very Important	VI	7	6,7,8	(1/8, 1/7, 1/6)
Extremely Important	EI	9	9,9,9	(1/9, 1/9, 1/9)
Intermediate Values	IV	2;4;6;8	1,2,3;3,4,	(1/3, 1/2, 1;
			5;5,6,7;7, 8,9	1/5, 1/4, 1/3; 1/7, 1/6, 1/5; 1/9, 1/8, 1/7)

The fuzzy logic framework enables the incorporation of expert opinions and linguistic judgments into a structured decision model, ensuring that both qualitative and quantitative elements of inequality are represented coherently (Mladenović et al., 2025, p.20; Gavurova et al., 2023, p.8). In this sense, F-AHP provides a methodological advantage by transforming expert-based, qualitative assessments into measurable priority weights while preserving uncertainty and ambiguity (Bozbura & Beskese, 2007, p.138; Gedikli & Koca-

man, 2025). This approach allows for a more comprehensive interpretation of inequality dimensions compared to conventional AHP or purely statistical models, which often fail to capture the complexity of social phenomena in crisis contexts (Omane et al., 2025, p.13).

The steps of Fuzzy AHP analysis can be summarized as follows (Sevklı et al., 2012, p.18; Tuzkaya & Önüt, 2008, p.3138; Büyüközkan & Çiftçi, 2012, p.3006; Gedikli & Kocaman, 2025, p.17).

Determination of criteria

The main criteria and sub-criteria to be considered in the decision-making process are defined.

Making pairwise comparisons

Expert opinions are obtained, and the criteria are compared pairwise with each other. These comparisons are made using linguistic variables (very important, important, moderate, etc.) and converted into triangular fuzzy numbers as in Table 3.

Consistency analysis

The logical consistency of the binary comparisons made is checked. If the consistency ratio is below the acceptable limit (usually 0.10), the results are considered valid.

Creating the fuzzy decision matrix

The fuzzy comparison matrix is prepared using the results of the pairwise comparisons. The diagonal of the matrix contains unit values, while the other cells contain the comparison values and their inverses.

Calculation of fuzzy weights

Fuzzy weights reflecting the relative importance levels of the criteria are obtained from the matrix. At this stage, the Fuzzy Logarithmic Least Squares Method (FLLSM) is commonly employed to derive the fuzzy weights from the pairwise comparison matrix. The method converts the fuzzy judgments into a logarithmic form and determines the weight vector by solving a set of equations that minimize

the logarithmic error. Unlike Chang's Extended Analysis Method, which involves several normalization and defuzzification operations, FLLSM directly computes the relative importance of each criterion through logarithmic averaging, thus providing a more straightforward and consistent estimation of fuzzy weights (Bozbura & Beskese, 2007, p.138).

Defuzzification

The obtained triangular fuzzy weights are converted into single (definite) values. Thus, the final and usable weights for each criterion are calculated.

Interpretation of result

The weights obtained after defuzzification reveal the order of importance of the criteria and are reported for use in the decision-making process.

Ethical Aspects of the Research

The scientific suitability of the research was approved by the Non-Interventional Clinical Research Ethics Committee of a university (Date: 28/08/2025, Decision No: 1070). Written informed consent was provided by all participants using the tenets of the Declaration of Helsinki.

Results

The social inequalities in health identified through the literature review were evaluated by experts using AHP forms, and comparison matrices were obtained. The importance levels corresponding to each criterion comparison in the decision matrices were converted to the fuzzy numbers shown in Table 3. The integrated decision matrix was created by taking the geometric mean of the values in the matrix containing the opinions of the six experts (Table 4).

Table 4. F-AHP integrated decision matrix

	BA			SS			GF			GA			PE		
BA	1	1	1	0,329	0,365	0,402	4,108	4,565	5,021	5,815	6,461	7,107	1,36	1,512	1,663
SS	2,464	2,737	3,011	1	1	1	7,2	7,85	8,36	7,11	7,23	8,2	3,724	4,138	4,551
GF	0,197	0,219	0,241	0,1	0,111	0,122	1	1	1	1,274	1,415	1,557	0,298	0,331	0,364
GA	0,139	0,155	0,17	0,1	0,111	0,122	0,636	0,706	0,777	1	1	1	0,211	0,234	0,257
PE	0,595	0,662	0,728	0,218	0,242	0,266	2,718	3,02	3,322	3,847	4,275	4,702	1	1	1
EHL	0,285	0,317	0,348	0,104	0,116	0,127	1,301	1,445	1,59	1,841	2,046	2,25	0,431	0,479	0,526
CED	1,831	2,035	2,238	0,669	0,743	0,818	6,8	7,15	8,6	7,68	8,4	8,63	2,768	3,076	3,383
LE	0,103	0,114	0,126	0,1	0,111	0,122	0,47	0,522	0,575	0,665	0,739	0,813	0,156	0,173	0,19
HSC	0,864	0,96	1,056	0,316	0,351	0,386	3,945	4,383	4,821	5,584	6,204	6,825	1,306	1,451	1,597
LS	1,298	1,442	1,586	0,474	0,527	0,579	5,924	6,582	7,24	5,32	6,12	7,65	1,962	2,18	2,398

	EHL			CED			LE			HSC			LS		
BA	2,843	3,158	3,474	0,442	0,491	0,541	7,864	8,738	8,9	0,937	1,041	1,146	0,624	0,693	0,763
SS	7,781	8,645	8,96	1,211	1,345	1,48	5,5	6,2	7,1	2,566	2,851	3,136	1,709	1,898	2,088
GF	0,623	0,692	0,761	0,1	0,111	0,122	1,723	1,914	2,106	0,205	0,228	0,251	0,137	0,152	0,167
GA	0,44	0,489	0,538	0,1	0,111	0,122	1,217	1,352	1,488	0,145	0,161	0,177	0,1	0,111	0,122
PE	1,881	2,09	2,298	0,293	0,325	0,358	5,203	5,781	6,359	0,62	0,689	0,758	0,413	0,459	0,505
EHL	1	1	1	0,14	0,156	0,171	2,49	2,767	3,043	0,297	0,33	0,363	0,198	0,22	0,242
CED	5,784	6,427	7,07	1	1	1	7,32	8,12	8,7	1,907	2,119	2,331	1,27	1,411	1,552
LE	0,325	0,361	0,398	0,1	0,111	0,122	1	1	1	0,107	0,119	0,131	0,1	0,111	0,122
HSC	2,729	3,033	3,336	0,425	0,472	0,519	7,551	8,39	8,65	1	1	1	0,599	0,666	0,733
LS	4,099	4,554	5,01	0,638	0,709	0,779	6,32	6,85	6,93	1,352	1,502	1,652	1	1	1

Triangular fuzzy numbers were obtained for each criterion comparison in the integrated fuzzy decision matrix. The geometric means of the relevant fuzzy number were calculated according to the row order of the comparison matrix, the sum of the columns was found, and the inverses were taken to obtain the minimum, median, and maximum values (Table 5).

Table 5. Decision Matrix geometric mean totals and minimum, median, and maximum Values

	Geometric Mean		
	<i>l</i>	<i>m</i>	<i>u</i>
BA	1,510317232	1,660227029	1,795858473
SS	3,183019825	3,466766278	3,769443467
GF	0,343012516	0,377007593	0,410710676
GA	0,260667306	0,286512294	0,311978096
PE	0,999584949	1,098925103	1,197368346
EHL	0,478347554	0,526343982	0,572791864
CED	2,666271964	2,910279624	3,169419523
LE	0,210967155	0,231754886	0,252645542
HSC	1,450427475	1,594681522	1,726358315
LS	1,96312118	2,160598864	2,363931778
Total	13,06573715	14,31309718	15,57050608
Inverse	0,076536057	0,069866081	0,064223988
Sort	0,064223988	0,069866081	0,076536057

Then, the fuzzy weights, averages, and normalized relative weights of the criteria were determined. The average and normalized weights are specified in Table 6.

Table 6. Fuzzy AHP average and normalization weights

Abbreviations	Inequalities	Average Weight	Normalized Weight	Rank
BA	Barriers to Access	0,116	0,115	4
SS	Socioeconomic Status	0,245	0,242	1
GF	Geographical Factors	0,026	0,026	8
GA	Gender and Age	0,020	0,020	9
PE	Psychosocial Effects	0,077	0,076	6
EHL	Education / Health Literacy	0,037	0,036	7
CED	Cultural and Ethnic Differences	0,205	0,203	2
LE	Lifetime Effects	0,016	0,016	10
HSC	Health System Capacity	0,112	0,111	5
LS	Legal Status	0,152	0,151	3

According to Table 6, the most significant social inequalities in access to healthcare during war and forced migration were found to be "Socioeconomic Status" with a normalized weight score of 24.2%. This was followed by "Cultural and Ethnic Differences" with 20.3% and "Legal Status" with 15.1%. "Lifetime Effects" was determined to be the least significant inequality with a weight of 1.6%.

Discussion and Conclusion

Within the scope of the study, socioeconomic status was identified as the most significant social inequality in access to healthcare during periods of war and forced migration. During a crisis, resource allocation should primarily focus on addressing

this inequality. It is predicted that individuals' health status will decline most significantly when this inequality is not addressed. Indeed, various studies support this view in the literature. Maia et al. (2024, p.3) emphasized in their study that socioeconomic status is a significant factor in limited access to healthcare during migration and exacerbating existing health problems. Similarly, Dawkins et al. (2020, p.3) and Wenner et al. (2021, p.5) stated that poverty and education level significantly affect the health outcomes of displaced populations. Ngo and Li et al. (2020, p.732), in their study on the cultural identity and adaptation of immigrants in China, found that immigrants with lower socioeconomic status face numerous barriers to accessing basic healthcare services. Meanwhile, Lv et al. (2023, p.4) note that socioeconomic status is significantly associated with health inequalities, and that accessing the healthcare services needed by individuals with lower socioeconomic status is becoming increasingly difficult. In their study on the situation of Syrian refugees in Türkiye, Balçılar and Gulcan (2022, p.5) stated that factors such as demographic background and marital status, intertwined with socioeconomic status, significantly impact access to healthcare services.

The second most vital and prioritized type of social inequality in health was identified as "cultural and ethnic differences." In this context, Fagundo-Rivera et al. (2025, p.410), in their research about the difficulties experienced by irregular migrants in accessing healthcare, sought out and identified several barriers that affect migrants in accessing medical services. Of these barriers, in particular, they pointed out language and cultural barriers, communication barriers due to linguistic differences, and cultural misunderstandings as being especially important. Newaz and Riediger et al. (2020, p.280) noted that refugees also face stigma and social exclusion associated with specific ethnic groups as a consequence of enforced seclusion, which directly influences their health status and services access. On the contrary, Kanengoni et al. (2023, p.166), in their study among a group of immigrant respondents, found that immigrants' cultural expectations in being taken care of by caregivers were not met, resulting in disappointment with access to the healthcare system. Evidently, it

is markedly emphasized that not meeting immigrants' cultural expectations and therefore ensuing disappointment may induce disconnection with healthcare services. Likewise, Goniewicz et al. (2023, p.8) noted that refugees, in particular, find it more challenging to access healthcare due to ethnic and cultural barriers, which makes it harder to navigate complex systems in host nations.

The third most significant and prioritized form of social inequality regarding access to healthcare services arises from the legal status of migrants. The ambiguity associated with their legal status, alongside the absence of or complexity surrounding statuses like temporary protection, social security, and citizenship, intensifies the obstacles to obtaining healthcare services. In existing literature, Hamilton et al. (2022, p.1245) and Lorini et al. (2020, p.1150) highlight that migrants lacking legal status within host nations frequently encounter challenges in acquiring health insurance and accessing necessary healthcare services. Likewise, Gogishvili et al. (2021, p.5) assert that migrants in Spain struggle to fulfill the legal prerequisites for utilizing free healthcare services, which are essential for securing healthcare based on their legal identity. Furthermore, Odhiambo et al. (2022, p.850) underscore in their research that Black migrants with uncertain immigration status are excluded from accessing healthcare services due to the absence of health insurance. Additionally, Mbanya et al. (2020, p.5) conducted a qualitative investigation revealing that immigrant women from Sub-Saharan Africa experience even greater limitations in accessing health services as a result of the uncertainty surrounding their legal status.

Research evidence and literature show that barriers to migrants and forcefully displaced individuals in accessing healthcare need to be addressed in a structural and multifaceted approach. The prominent predictor of socioeconomic status underscores that resource allocation and policy planning should focus intensely on this aspect in times of crisis. Individuals with low income, below the poverty line, and without educational prospects are the most vulnerable in terms of healthcare access. The establishment of subsidized healthcare services by means of direct financial services, cash transfers in the form of grants, strengthening of social protection schemes, in addition to establishing

community-based educational projects in order to enhance health literacy, appear as key solutions and strategies. However, linguistic barriers, cultural misunderstandings, and ethnic discrimination further complicate immigrants' access to healthcare systems and lead to further alienation. In order to cross such barriers, it is imperative to increase cultural mediation services in healthcare environments, create communication channels across varying languages and cultures, and provide cultural sensitivity and inclusive communication training to healthcare professionals as both short- and long-term measures. In addition, engaging cultural representatives of immigrant communities in planning healthcare services facilitates establishing more trust and higher contentment in such services. Beyond this, the lack of clarity regarding migrants' legal status systematically excludes them from accessing healthcare. Individuals under temporary protection or under unclear legal status face significant hardships in accessing health insurance and basic services. Meeting such disparities requires providing a guaranteed minimal level of care to all migrants, taking up a justice-based approach to care regardless of their legal status, as well as enact streamlined rules of social security and care access within host societies.

Correcting the three acknowledged social inequalities, both critical and of highest priority, will not only support equal access to care, it will also serve far in improving long-term health status in immigrant groups. Future studies are recommended to conduct comparative analyses encompassing the experiences of different immigrant groups and longitudinal studies to reveal changes in socioeconomic, cultural, and legal inequalities over time. Furthermore, in-depth examination of immigrants' lived experiences, not only through quantitative methods but also through qualitative research, could facilitate the development of more humane and inclusive policies in healthcare planning.

Declarations

Funding: No funding was received for conducting this study.

Conflicts of Interest: The author declares no conflict of interest.

Ethical Approval: The study was approved by a Non-Interventional Clinical Research Ethics Committee (Decision No.: 1070; Date: 28 August 2025) prior to data collection.

Informed Consent: Written informed consent was obtained from all expert participants before completing the F-AHP questionnaires; participation was voluntary and confidential.

Data Availability: Due to confidentiality considerations, raw expert questionnaires are not publicly available. De-identified integrated decision matrices, defuzzified weights, and analysis materials generated during the study are available from the corresponding author upon reasonable request.

AI Disclosure: No generative artificial intelligence tools were used in the conception, analysis, writing, or editing of this manuscript. All computations were carried out using standard Fuzzy AHP routines, and all interpretations and writing were performed by the author in accordance with scientific research methods and academic ethical principles.

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