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# Cross-border strategies for access to healthcare in violent conflict – A scoping review

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ABSTRACT

*Background:* The geographical reconfiguration of healthcare systems in times of violent conflict is increasingly being recognised in academic literature. This includes conflict-induced, cross-border travel for medical treatment. Yet the conceptual approach to this healthcare-seeking behaviour, by a population here referred to as cross-border population, remains poorly understood. This scoping review identifies academic literature on cross-border populations to map the current approach to cross-border populations and to propose a research agenda.

*Methods:* The study used a scoping review following the Joanna Briggs Institute Scoping Review methodology. We included articles on conflicts between 1980 and 2019.

*Results:* A total of 53 articles met the inclusion criteria. From these articles, we distinguished four types of studies on cross-border healthcare: Direct analysis, implicit analysis, clinical research, and identification. The 45 articles belonging to the first three categories were then searched for themes specifically relevant to healthcare for cross-border populations and linked with sub-themes such as border crossing time and the types of healthcare available. These themes were structured into three main areas: access to care; quality of care; and governance of care. Our analysis then describes the available knowledge, documented practices, and challenges of cross-border healthcare specifically in conflict settings.

*Conclusions:* A better understanding of cross-border healthcare systems is required to inform local practices and develop related regional and international policies. While the reviewed literature provides some highlights on various practices of cross-border healthcare, there are many gaps in available knowledge of this topic. To address these gaps, our study proposes a research framework outlining key themes and research questions to be investigated by signposting where major research and operational gaps remain. This facilitates well-directed future work on cross-border therapeutic geographies in the context of armed conflict and furthers understanding of a hitherto largely ignored area of the international healthcare system.

## 1. Introduction

The health effects of violent conflict go far beyond direct casualties. Conflict predisposes populations to a wider range of health needs and while healthcare demands increase, human and material resources decline, are repurposed, or even targeted. This leaves often large populations in areas of active conflict with diminished or even no access to healthcare. In recent years, there has been increasing attention on the impact of violent conflict on healthcare systems across a range of conflict-affected settings. It is being recognised that healthcare systems in times of violent conflict can no longer be "conceptualised as being confined to the borders of the state" [Dewachi et al., 2014] as populations travel to seek healthcare in neighbouring countries. This notion is captured by the concept of therapeutic geography, the tendency of healthcare to geographically reorganize within and across borders, specifically under conditions of war [Dewachi et al., 2014]. Conflict-induced cross-border travel for medical treatment and its resulting therapeutic geography (hereafter referred to as 'therapeutic geography', the conflict-setting implied unless indicated otherwise) is meant to "go beyond stories of displacements and breakdown of national healthcare systems" in public and global health discourse and instead map "'alternative' configurations" which reveal coping strategies of the affected populations [Dewachi, Rizk, and Singh, 2018]. It offers a language in which to describe hitherto obscure insights to broader questions of access to

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healthcare in violent conflict. Given therapeutic geography focuses on the location of healthcare, it includes all actors: not only traditional humanitarian agencies, but also pre-existing health institutions and local state, quasi-state, and non-governmental organisations (NGOs).

Various authors have built on the concept of therapeutic geography in their work. For example, [Rouland and Jarraya, 2020] apply therapeutic geographies to study Libyan migrants seeking healthcare in Tunisia in the decade before 2011 and, compared this to the experience during the Libyan civil war of 2011 onwards. [Parkinson and Behrouzan, 2015] developed the concept by considering access to health of Syrian and Palestinian refugees in Lebanon. However, lacking thorough conceptual investigation, therapeutic geographies as a concept remains vaguely defined and therefore difficult to operationalise. [Dewachi et al., 2014]. first described the concept as the geographical reorganisation of healthcare within and across borders, leaving various aspects ambiguous; for example whether this reorganisation is supposed to be deliberate, organised or spontaneous, to what extent it includes informal aspects of healthcare provision (e.g. Syrian informal healthcare workers in Lebanon, see [Honein-AbouHaidar et al., 2019]), or whether it includes healthcare systems specific to the violent conflict, such as medical missions by the military (see [Schwartz et al., 2009]) and healthcare for refugees.

In this scoping review, we rely on a narrow interpretation of the concept: we look only at the health seeking behaviour of conflict-affected populations to meet their needs abroad. What constitutes healthcare includes, but is not limited to, care for pre-existing conditions, war-related injuries, maternal healthcare and mental healthcare. Concretely, this means that someone who would previously travel to a local hospital, for example with acute abdominal pain, would in times of violent conflict be forced to seek care across a border. While recognising the vast geographic changes to healthcare configurations in times of violent conflict, this scoping review focusses only on those reconfigurations that take place across a national border of proximate countries. It asks three interrelated questions: what empirical descriptions of such movement exist in academic literature; how the terms have been conceptually approached; and what lessons have present work drawn about the unique challenges facing cross-border healthcare. This scoping review aims to provide more in-depth substance to the term 'therapeutic geographies' and proposes a research agenda for its further development. To do so, we focus on the narrow definition set out above, leaving the extension of further interpretation of the concept to future research. We review academic literature on populations who move across national borders of a conflict zone driven primarily by the search for healthcare. From this data we synthesise the essential themes and research questions, with the further objective of deriving a concrete research agenda. This should facilitate future work on cross-border therapeutic geographies in the context of armed conflict.

## 2. Key definitions

For the purpose of this review, regional cross-border therapeutic geographies refer to regional movements across a national border by inhabitants of a conflict-zone, primarily driven by the search for healthcare, while these conflict-affected persons are most likely to return to their home countries after their treatment [Dewachi et al., 2014, Dewachi, Rizk, and Singh, 2018]. We tried to distinguish this group from refugees, who cross borders in search of safety and reside in destination countries. We recognise that this distinction is blurred: healthcare is a form of safety too and, vice versa, refugees often end up in foreign healthcare systems.

Articles concerning this group of persons were selected using a four-tier set of primary inclusion criteria: human healthcare, violent conflict, regional cross-border movement, and return to country of origin. Health seeking behaviour included seeking out emergency as well as chronic care, including mental healthcare. No distinctions were made in terms of healthcare providers: public, private, humanitarian, or military hospitals, clinics or other formal care givers in primary, secondary and tertiary settings. Conflict is defined as a contested incompatibility that concerns governments and/or territories where the use of armed force between two parties (or more), of which at least one is the government of a state, resulted in at least 25 battle-related deaths in one calendar year [Pettersson and Wallensteen, 2015]. Regional movement was defined as travel to a bordering or nearby country. In this article, we tried to discern refugees by confirming that the articles find patients return to their country of origin after treatment or they explicitly mention that the journey is primarily motivated by a search for healthcare rather than safety. For example by stating "[a]fter being stabilised primarily by an emergency trauma surgical trauma team on the ground in Libya, they were transferred to Malta for further treatment" [Ng et al., 2015]. We only included those papers where we felt it was safe to assume that people would not have crossed the border in these circumstances if it were not for their demand for healthcare.

## 3. Methods

This scoping review followed the Joanna Briggs Institute Scoping Review Methodology (JBI methodology) [Peters et al., 2015], albeit with a focus only on academic literature. From the academic literature, all study types and methods were included and limited to those published in English. To ensure a degree of contemporary relevance in terms of medical and humanitarian strategies, type of conflict and cross-border dynamics, we only included articles on conflicts dating back to 1980.

We searched two major health research-databases: PubMed Central and Web of Science. A three-component search strategy was developed that identified 'armed conflict' (20 search terms) and 'health' (14 search terms) components in title and abstract, and a 'border' component (7 search terms) in all fields. Studies were selected by one author (RB) through a screening and selection stage, following the JBI methodology [Liberati et al., 2009], and the selection, screening, and analysis processes were corroborated by another author (AE). Exclusion of articles was performed using a four-tier set of primary inclusion criteria, as defined in the previous section:

1. Concerning human healthcare;
2. Set in violent conflict;
3. Mentioning cross-border movement of patients into a nearby country, and;
4. Mentioning return to the area of conflict or medical motivation for travel.

The reference lists of the included articles where subsequently examined for further relevant articles.

For each of the included articles, baseline characteristics were summarised - including geographic features, patient characteristics, and type of care provided. Subsequently, we searched each article for unique features of the cross-border population and the challenges they face. These were retrospectively synthesised into relevant themes pertaining to the meaning of cross-border care, knowledge gaps, and direction of future research.

## 4. Results

The original search identified 1771 articles, from which 710 duplicates were removed. Screening titles and abstracts of the remaining 1061 studies against inclusion criteria left 350 studies to be assessed for eligibility, 43 of which met the inclusion criteria. From the references of these articles, 10 additional articles were identified and included.

### 4.1. Bibliometric analysis

Of the 53 included articles, 26 (49%) were published after 2015, 16 (30%) between 2000 and 2015 and 11 (21%) before 2000. Most first

**Table 1**
Included studies.

| Name reference | Category * | Conflict |
|---|---|---|
| Category 1 (n=8): Refer to [Dewachi et al., 2014] or 2018 [Dewachi, Rizk, and Singh, 2018] or create a theoretical framework to define cross-border populations seeking healthcare, treating cross-border healthcare systems either as a policy objective or as an empirical reality. | | |
| [Yusuf et al., 2020]. | 1 | Afghan civil war |
| [Skelton et al., 2020]. | 1 | Iraq War |
| [Braverman, 2020] | 1 | Syrian civil war |
| [Rouland and Jarraya, 2020] | 1 | Libyan civil war |
| [Dewachi, Rizk, and Singh, 2018]. | 1 | Iraq War |
| [Hayari et al., 2017]. | 1 | Not specified |
| [Dewachi et al., 2014]. | 1 | Iraq War |
| [McQueen et al., 2007]. | 1 | Iraq War |
| Category 2 (n=7): Investigate a system of cross-border healthcare without a theoretical framework, usually assuming singularity and emphasizing cost. | | |
| [Akçan et al., 2019]. | 2 | Syrian civil war |
| [Bahouth et al., 2017]. | 2 | Syrian civil war |
| [Issa and Zarka, 2016] | 2 | Syrian civil war |
| [Young et al., 2016]. | 2 | Syrian civil war |
| [Zarka, 2016] | 2 | Syrian civil war |
| [Eisenberg and Benbenishty, 2013] | 2 | Syrian civil war |
| [Marasović et al., 2002]. | 2 | Bosnian War |
| Category 3 (n=30): Discuss healthcare provided to the cross-border population through clinical record review or clinical experience to draw medical or epidemiological lessons, with varying regard for the sociopolitical context | | |
| [Çelikkaya et al., 2020]. | 3 | Syrian civil war |
| [Naaman, Yulevich, and Sweed, 2020]. | 3 | Syrian civil war |
| [Ucak, 2019] | 3 | Syrian civil war |
| [El Hajj Abdallah et al., 2019]. | 3 | Syrian civil war |
| [Benov et al., 2019]. | 3 | Syrian civil war |
| [Arlı, Özkan, and Karakuş, 2019]. | 3 | Syrian civil war |
| [Kilic et al., 2018]. | 3 | Syrian civil war |
| [Bahouth et al., 2017]. | 3 | Syrian civil war |
| [Biswas et al., 2016]. | 3 | Syrian civil war |
| [Salamon et al., 2016]. | 3 | Syrian civil war |
| [Bitterman et al., 2016]. | 3 | Syrian civil war |
| [Lerner et al., 2016]. | 3 | Syrian civil war |
| [Ng et al., 2015]. | 3 | Libyan civil war |
| [Iflazoglu et al., 2015]. | 3 | Not specified |
| [Barhoum et al., 2015]. | 3 | Syrian civil war |
| [Akkucuk et al., 2016]. | 3 | Syrian civil war |
| [Aras et al., 2014]. | 3 | Syrian civil war |
| [Inci et al., 2014]. | 3 | Syrian civil war |
| [Benov et al., 2014]. | 3 | Syrian civil war |
| [Karakuş et al., 2013]. | 3 | Syrian civil war |
| [Murphy et al., 2011] | 3 | Iraq War |
| [Jeffrey, 1996] | 3 | Afghan Civil War |
| [Bowyer, 1996] | 3 | Afghan Civil War |
| [Bowyer, 1995] | 3 | Afghan Civil War |
| [Bhatnagar, Curtis, and Smith, 1992]. | 3 | Afghan Civil War |
| [Bhatnagar and Smith, 1989] | 3 | Afghan Civil War |
| [Fasol et al., 1988]. | 3 | Cambodian-Vietnamese War |
| [Coupland and Howell, 1988] | 3 | Afghan Civil War |
| [Rautio and Paavolainen, 1988]. | 3 | Afghan Civil War |
| [Gertsch, 1987] | 3 | Afghan Civil War |
| Category 4 (n=8): Mention the cross-border population, without providing analysis | | |
| [Tangseefa et al., 2018]. | 4 | Burmese civil war |
| [Saab et al., 2018]. | 4 | Syrian civil war; Iraqi war; Israeli-Palestinian conflict |
| [Doganay and Demiraslan, 2016] | 4 | Syrian civil war |
| [Low et al., 2014]. | 4 | Burmese civil war |
| [Derderian, 2014] | 4 | Cote d'Ivoir Post-elections dispute |
| [Pedersen, Pedersen, and Santitamrongpan, 2012]. | 4 | Burmese civil war |
| [Rutherford, 1997] | 4 | Somalian Civil War, Congolese Civil War |
| [Coupland, 1993] | 4 | Cambodian-Vietnamese War |

authors were affiliated with institutions in Israel (n=15, 28%), Turkey (n=11, 21%) and the United States (n=8, 15%), followed by Pakistan and Lebanon (n=3 each, 6%).

The geographical distribution of the origins of patients was diverse but skewed towards the Middle East. The Syrian conflict alone was the subject of 27 articles (51%), with eleven mentions of the Syrian/Turkish border, fifteen of the Syrian/Israeli border and one of the Syrian/Lebanese border. After that, the most frequently mentioned conflicts were the Afghan conflicts from 1979 onwards (n=9) and the Iraqi conflict from 2003 onwards (n=6) (see Table 1).

The healthcare providers in the neighboring countries were specified in 44 (83%) of the articles. Single institutions repeatedly mentioned were the Ziv Medical Centre in Safed (n=7),Galilee Medical Center (n=6) and Rambam Medical Center (n=5) in Israel, in Turkey the Mustafa Kemal University in Hatay (n=6), in Lebanon the American University of Beirut Medical Center (n=3) and in Pakistan the Internal

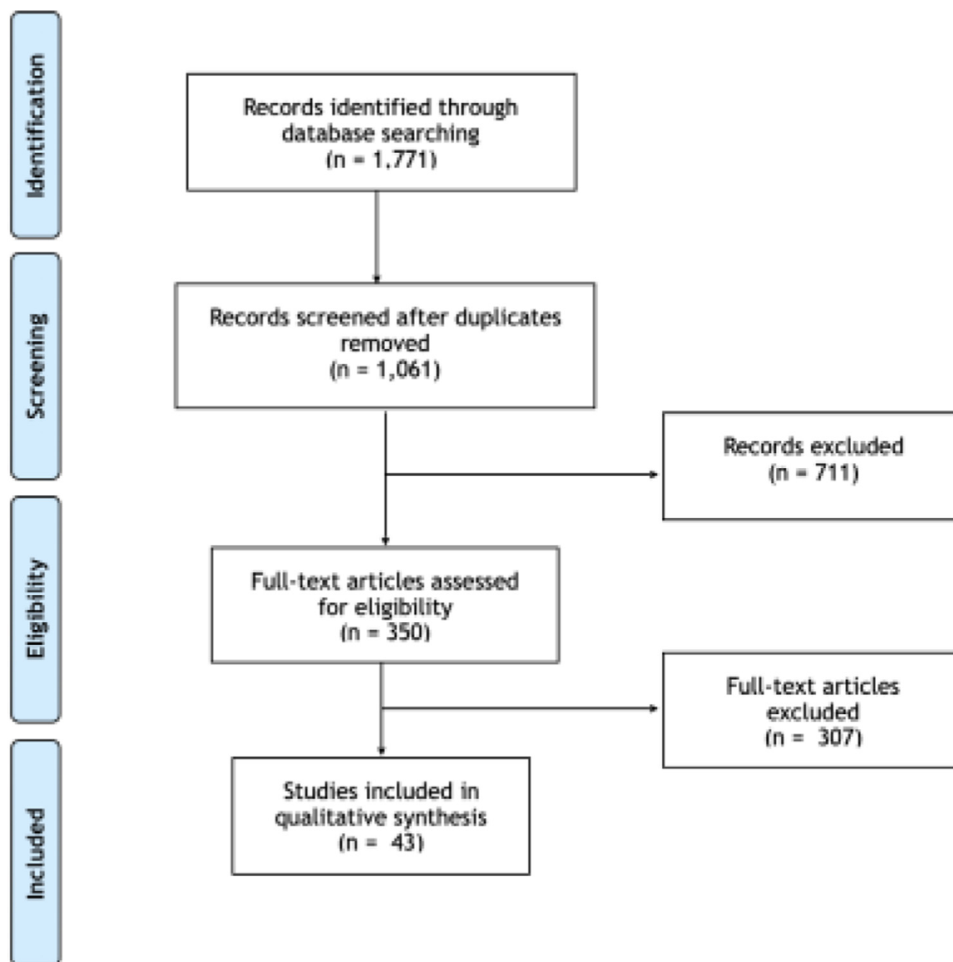


**Fig. 1.** PRISMA Flow diagram for the scoping review.

Committee of the Red Cross (ICRC) hospitals in Peshawar and Quetta (n=8).

### *4.2. Methodological approaches of identified articles*

We found a great variety of research methods employed as well as a variety of ways in which authors conceptualised the cross-border population. In this section, we discuss four broad categories of approaches we distinguished, particularly evident in the aim of each study, summarized in Table 1. The first group aimed to analyse cross-border patient care. The second group similarly analysed cross-border patient care, but without explicit conceptualisation of the phenomenon. The third group consists of clinical studies in a cross-border population. And in the fourth group, the cross-border population was identified but not investigated.

Eight articles fall into the first group [Braverman, 2020, Dewachi et al., 2014, Dewachi, Rizk, and Singh, 2018, Hayari et al., 2017, Liberati et al., 2009, McQueen et al., 2007, Rouland and Jarraya, 2020, Skelton et al., 2020] Five of them [Dewachi et al., 2014, Dewachi, Rizk, and Singh, 2018, Rouland and Jarraya, 2020, Skelton et al., 2020, Yusuf et al., 2020] explicitly refer to the original concept by [Dewachi et al., 2014]., thereby placing their case study in its theoretical framework.

The other studies [Braverman, 2020, Hayari et al., 2017, McQueen et al., 2007] created their own theoretical framework. [Hayari et al., 2017]., for example, stated that “[t]he treatment of the war wounded in neighbouring countries, not formally engaged in conflict, is not new,” and listed examples of countries familiar with this form of healthcare reconfiguration. A clear distinction could be made between articles which primarily regarded cross-border therapeutic geographies as a policy objective and others which treated it as a spontaneous effect of conflict-related circumstances. Three articles argue that cross-border care systems can be a “solution” for an international community seeking to meet healthcare needs in conflict zones [Braverman, 2020, Hayari et al., 2017, McQueen et al., 2007]. [Braverman, 2020] goes as far as to argue that “international policy” supporting “military-based cross-border medical assistance may be the first step toward the possible reduction of the world’s current refugee crisis” by “reducing the number of people displaced.” The other five articles, all of which draw on the original concept of therapeutic geographies, treat systems of cross-border care as “empirical realities” [Dewachi et al., 2014, Dewachi, Rizk, and Singh, 2018, Rouland and Jarraya, 2020, Skelton et al., 2020, Yusuf et al., 2020]. Rather than as a top-down solution, they see changing therapeutic geographies as a reaction to realities on the ground, for instance “conflict-related deficiencies in healthcare at home force patients with limited financial resources to undergo cancer treatment in neighboring countries” [Skelton et al., 2020]. However, these two ways of thinking about therapeutic geographies are not mutually exclusive.

The second group we identified included seven articles which reported on a system of cross-border healthcare but did not use or create a theoretical framework or refer to other instances of changing therapeutic geographies [Akçan et al., 2019, Bahouth et al., 2017, Eisenberg and Benbenishty, 2013, Issa and Zarka, 2016, Marasović et al., 2002, Young et al., 2016, Zarka, 2016]. Rather, they stressed the particularities of each context and took a more political perspective. All seven articles aimed “to present the work” of a hospital [Marasović et al., 2002], “to discuss the effects” [Akçan et al., 2019] or “demonstrate […] the burden” [Issa and Zarka, 2016] of delivering cross-border care, in

other words, drawing attention to the cost faced by the host, in terms of finance, workload or mental and emotional challenges. In doing so, they all juxtaposed their findings to an expression of commitment, albeit to different degrees. Some leaned more towards emphasising empathy, such as [Eisenberg and Benbenishty, 2013]: “we are willing and prepared to do what we can to meet their needs and ease their suffering.” Only one leaned more towards emphasising obligation and cost: “Turkey also *had to* provide health service for civilians (…) which consequently result [sic] in a crisis in the application of health services” [emphasis added] [Akçan et al., 2019]. The six articles which emphasised empathy highlighted the moral character of the work in their conclusion: “an attempt to overcome the risks of and challenges to doing the right thing—offering a helping hand to those Syrian patients” [Bahouth et al., 2017]. Taking a more conservative approach, [Akçan et al., 2019]. concluded that “[a]side from the economic and social burdens, the war itself can cause many disastrous consequences in public security and health services, which can easily be transferred to neighboring areas.”

The largest group is the third, clinical research. These 30 articles [Akkucuk et al., 2016, Aras et al., 2014, Arlı, Özkan, and Karakuş, 2019, Bahouth et al., 2017, Barhoum et al., 2015, Benov et al., 2019, Benov et al., 2014, Bhatnagar and Smith, 1989, Bhatnagar, Curtis, and Smith, 1992, Biswas et al., 2016, Bitterman et al., 2016, Bowyer, 1996, Bowyer, 1995, Çelikkaya et al., 2020, Coupland and Howell, 1988, El Hajj Abdallah et al., 2019, Fasol et al., 1988, Gertsch, 1987, Iflazoglu et al., 2015, Inci et al., 2014, Jeffrey, 1996, Karakuş et al., 2013, Kilic et al., 2018, Lerner et al., 2016, Murphy et al., 2011, Naaman, Yulevich, and Sweed, 2020, Ng et al., 2015, Rautio and Paavolainen, 1988, Salamon et al., 2016, Ucak, 2019] discuss healthcare provided to the cross-border population through clinical record review or clinical experience of the author(s), nearly all concerning war trauma. The aim of each of these articles is to draw medical or epidemiological lessons from the clinical caseload. Simultaneously, they acknowledge the context in which care is provided, to varying degrees. For example, [Iflazoglu et al., 2015]. “evaluated patients operated for penetrating abdominal firearm injuries,” factoring in that these patients came to Turkey from Syria with delay in presentation. [Ng et al., 2015]. on the other hand aimed to assess outcomes of orthopedic damage control surgery, while simultaneously aiming to highlight “the difficulties and complex issues required on a hospital management level as a neighbouring country to war zone countries.” The former stresses the medical lessons only, the latter the social ones too. The importance of the cross-border dimension is reflected in the structure of the article. For example, while [Iflazoglu et al., 2015]. treat the cross-border dimension only as a delay in presentation, [Bowyer, 1995] dedicates a section of the text to the specific outbreaks of violence that wounded the patients in the clinic, including the social dimension. [Salamon et al., 2016]. go even further and created a paragraph with the title ‘The condition of the patients on arrival,’ which discusses treatment in the country of origin and the effect of that on the condition of the patients at baseline.

The last category, with 8 articles [Coupland, 1993, Derderian, 2014, Doganay and Demiraslan, 2016, Low et al., 2014, Pedersen, Pedersen, and Santitamrongpan, 2012, Rutherford, 1997, Saab et al., 2018, Tangseefa et al., 2018], merely identifies the cross-border population without providing analysis. The subject of the articles was either healthcare systems in conflict areas or healthcare for refugees, and additionally note, for example "Syrians and Iraqis who have travelled from their home countries to Beirut specifically for medical care because of a lack of medical resources locally” [Saab et al., 2018]. They provide no further analysis of these patients, and we do not draw from these articles in our analysis.

### 4.3. Conceptual approaches of the identified articles

While the term therapeutic geographies in the context of conflict was introduced by [Dewachi et al., 2014]., it found meaning through application in later articles. In this process, authors tried to delineate between the changing geography of healthcare in peacetime, framed as medical tourism, and that in wartime, therapeutic geography [Dewachi, Rizk, and Singh, 2018, Rouland and Jarraya, 2020]. The term enabled authors to see that there “remains a significant lack of empirical data on the new therapeutic geographies of cancer in contemporary conflicts” [Yusuf et al., 2020], as well as of other illnesses. However, apart from a careful onset of conceptual development, none of the literature in our dataset explored the full scope of the term, and so it remains poorly delineated.

Therapeutic geography has the potential to unravel the complex healthcare systems that emerge in borderlands and draw lessons from the comparison of such systems. However, most of the studies we identified focused on case studies and the localised effects of cross-border medical travel, without generalising lessons to other cross-border healthcare settings. Furthermore, we found that none of the articles provided a clear structure to analyse the complex interplay of factors in cross-border health systems, leaving analysis scattered and incomplete. While some articles analyse many separate aspects of healthcare, each without much detail, others emphasise one aspect without recognising the plethora of other crucial features of the system. For example, [Ng et al., 2015]., [Biswas et al., 2016]. and [Arlı, Özkan, and Karakuş, 2019]. describe the context of war, financial burden of the care, and management of war trauma in one article, each important for the outcome of the care, but none rigorously studied. On the other hand, [Salamon et al., 2016]. and [Iflazoglu et al., 2015]. recognise that the care they provided and the population under study were different from usual, even from usual war trauma, but do not convey the impact of these distinguishing features. Their analysis remains incomplete. Few articles describe the complexity of the situation only to explicitly narrow their research down to one feature. A noteworthy exception is work by [Skelton et al., 2020]., which acknowledges the “scale and broader contours of this cross-border phenomenon beyond the participants interviewed” but focuses primarily on its financial dimension.

## 5. Discussion

Upon examining all articles from the first three categories, it becomes apparent that there are unique challenges associated with healthcare for the cross-border population, compared to healthcare for local nationals. An obvious and frequently mentioned example is the delay in presentation. This means that the most severely injured are likely to die before they reach a hospital, and those who make it are often in poor condition and at increased risk of severe infection and sepsis [Bhatnagar, Curtis, and Smith, 1992]. They might require complex treatment and lengthy rehabilitation, in turn raising workload and costs for the host country. To lay the foundation for future research in the change of therapeutic geographies, we map the essential challenges identified in our data. In the following section, we compile a set of themes for a selection of challenges: access to care; quality of care; and governance of cross-border care. Note, however, that therapeutic geographies look at where and why people move. None of these themes can capture the phenomenon without the interdisciplinary context.

### 5.1. Access to care

If cross-border healthcare systems emerge in response to limited access to care in the conflict-affected state, it becomes pivotal to understand who its beneficiaries are, and what services they have access to. Many authors described demographics of the foreign patients who crossed into their country for medical care. Yet, what determined these demographics was largely unexplored. Implicitly, however, factors that uniquely affect access in a cross-border setting were abound. Although access can be viewed from many angles, we found the following three most relevant: logistical challenges throughout the journey, aggravation of preexisting traditional determinants of access to healthcare, and the type of care available.

The need to cross a border to reach healthcare implies several logistical challenges. [Aras et al., 2014]. describe significant delays of up to five days "to wait for a safe time to cross the border." Visa policies can affect the crossing as well: "Pakistan has also implemented stricter border controls since 2016 and Afghan patients are now universally required to obtain a visa to enter Pakistan which has added to the difficulties facing these patients" [Yusuf et al., 2020]. The crossing often implies a long journey through hostile territory.

Cross-border travel, as well as the dynamics of war, can further aggravate preexisting traditional determinants of access, such as political affiliations, gender, age, knowledge of available services, physician referrals, wealth, and disability. For example, [Rouland and Jarraya, 2020] find that "violent conflict between different tribal communities limits mutual aid amongst Libyans travelling for medical care to Sfax." Particularly financial distress was well reported in those settings where out-of-pocket payments were the norm: "Fifty-four respondents (90%) reported high levels of financial distress associated with paying for treatment in Lebanon" [Skelton et al., 2020].

A third theme, implicit in our review, was the type of care that was accessible. [Bahouth et al., 2017]. share the remarkable reflection on the limits of humanitarian aid and ask, "should one limit one's assistance only to acute conditions resulting from the current military situation?" For example, physicians had to consider "cases requiring sophisticated and at times high-risk interventions including, for example, organ transplant or open-heart surgery for congenital heart defects". This would have been the standard of care available for nationals. [Bahouth et al., 2017]. make the important observation that "this specific ethical tension is not normally confronted during a typical humanitarian mission, where perforce capacity is limited by the finite resources available on site."

### 5.2. Quality of care

Authors of published papers in this review almost ubiquitously reflect on factors which compromised their ability to deliver quality care, such as time-constraints and stressful conditions, albeit in a sporadic, unstructured fashion [Kilic et al., 2018, Saab et al., 2018, Ucak, 2019]. In chronological order, some important themes we found on quality of care were: time to first aid; time and quality of cross-border transportation; communication of patient history; inexperienced care providers and inability to provide follow-up care.

Time to first aid and crossing time relate to pre-hospital care. Several authors mention first aid of varying quality in the field [Bhatnagar, Curtis, and Smith, 1992, Fasol et al., 1988] or in local care facilities [Bahouth et al., 2017, Hayari et al., 2017] usually concluding that this care proved insufficient. Furthermore, transport to a healthcare facility across the border was often not only delayed, but of sub-optimal quality. [El Hajj Abdallah et al., 2019]. mention that patients reached the Turkish facility from Syria not only by ambulance, but also "via personal transportation," and [Coupland and Howell, 1988] speak of "motorized transport, donkey and being bodily carried" across the border from Afghanistan into Pakistan. These challenges led several authors to conclude that "[severely] injured patients died before arriving to the border" ([27]; see also [Coupland and Howell, 1988, El Hajj Abdallah et al., 2019]). By lack of sufficient first aid and quality transport, some actors established field hospitals along borders, including Turkey [Kilic et al., 2018], Israel [Benov et al., 2019], and Pakistan [Coupland and Howell, 1988]. These provided quality first aid before patients were brought to the hospital.

Themes relating to quality of care inside hospitals received more explicit attention in the data. Particularly remarkable are the repeated frustrations expressed by healthcare providers about the lack of patient history and insufficient prior clinical experience with war-trauma because of a career in civilian medical care [Akkucuk et al., 2016, Ng et al., 2015, Ucak, 2019]. Regarding the former, [Salamon et al., 2016]. report "the inability to communicate optimally with patients and a lack of information about the injury, co-morbidities and first line treatment that had been administered in Syria (out of 450 patients only two arrived with transfer letters)." Instead, healthcare providers had to rely on medical imaging for diagnosis and clinical decision making [Salamon et al., 2016]. This complicates triage and diagnosis, and later safe and responsible treatment.

A final theme relevant to quality of care in the cross-border setting is the inability to schedule follow-up appointments. [Yusuf et al., 2020]. sum up that "52.7% of patients, including 53.9% of adults and 43.2% of paediatric patients, were lost to follow-up likely due to travel requirements," and [Hayari et al., 2017]. add that "medical treatment in a neighbouring country is one alternative to healthcare delivery but renders long-term follow-up unlikely." Consequences for therapeutic compliance or continuous access to medication were not discussed in any of the articles we reviewed.

### 5.3. Governance of cross-border healthcare

A unique aspect of cross-border care is the complexity of its governance, which has become increasingly evident from the response to the COVID-19 pandemic [Lee et al., 2021]. Governance, a broad and convoluted term, is further complicated in conflict settings, when traditional nationally oriented governance tools, ranging from strategic policy frameworks and regulation to effective oversight and accountability [World Health Organization (WHO). 2010], are challenged. Analysis of governance structures and the geographical and historical trends of cross-border health interactions was rare in our review, with some noteworthy exceptions (e.g [Bahouth et al., 2017, Dewachi, Rizk, and Singh, 2018, Rouland and Jarraya, 2020].). From the themes highlighted in the literature, the following were essential to cross-border care: finance, accountability, and strategic policy making.

The theme most elaborately covered was finance: the responsibility to ensure that adequate financial resources are available to deliver health services. The organisation of cross-border care puts considerable strain on existing healthcare resources. Ng et al. [2015]., for example, emphasise how "an influx of war trauma casualties (…) put a strain on the national health service" The concern that the influx of cross-border patients strains national resources is echoed by many others [Akçan et al., 2019, Arlı, Özkan, and Karakuş, 2019, Rouland and Jarraya, 2020]. Saab et al. [2018]. articulate the ensuing dilemma between the lives of local Lebanese and foreign patients after an increase of the non-Lebanese population". In Lebanon, "all Lebanese patients benefit from at least partial healthcare coverage through national healthcare plans." [Saab et al., 2018]. Saab et al. [2018]. find that "[t]he high cost of cancer care, the lack of financial means among these families, and the absence of third-party healthcare coverage for these patients have threatened the viability of local resources." We find that the sources of healthcare funding are diverse, as in this example. Out-of-pocket payments are common [Skelton et al., 2020], as well as funding through the government [Braverman, 2020]. Sometimes facilities relied on fundraising activities [Saab et al., 2018]. In two cases the government of the country of origin paid. For patients from Iraq, this was through the "Treatment Abroad Programme" [Dewachi, Rizk, and Singh, 2018]. Treatment for patients from Libya was previously funded through the government, but in the wake of war "bills went unpaid by the unstable Libyan state" [Rouland and Jarraya, 2020].

The second theme, accountability, was mentioned less frequently in the literature than finance. According to the WHO health system building blocks [World Health Organization (WHO). 2010], accountability refers to the responsibility to ensure adequate resources (including material and human resources), an understanding of how services are supplied, realise and monitor performance and achieve enforcement. Because of the complexity of the cross-border healthcare system, which often involves not only national politics, but also an interplay between market forces, multilateral relations, and humanitarian incentives, it is unclear who bears these responsibilities. One of the few arti-

cles which explicitly analysed accountability was [Dewachi, Rizk, and Singh, 2018].. They found that after the destruction of the healthcare infrastructure during war, the Iraqi government "'instrumentalised' therapeutic geographies to respond to its own failures to provide for its war-afflicted populations," creating the aforementioned Treatment Abroad Programme. They explicitly hold the government accountable for limited access to care through the Programme. However, [Dewachi, Rizk, and Singh, 2018]. do not explore what this mechanism means for the accountability of the countries benefitting from the ensuing agreements, like Lebanon.

The third essential theme is strategic policy making, usually discussed in national terms [World Health Organization (WHO). 2010]. Strategic policy making within the WHO health system building blocks encompasses policies which "outline priorities and the expected roles of different actors, inform and build consensus, and estimate the resources required to achieve goals and priorities" [World Health Organization (WHO). 2010]. In the literature, we found very little evidence of deliberate policy making in cross-border care. Most arrangements were reported to be reactive, and ad hoc. For example, when the first Syrians presented at the Israeli border and received life-saving medical treatment, "there was no real Israeli Government policy involving such an act; the army medical personnel simply did what they felt was right" [Bahouth et al., 2017]. An exception are international aid agencies operating across borders, who express some intent to plan and coordinate their response [Derderian, 2014, Gertsch, 1987, Jeffrey, 1996]. Little was written about the long-term consequences of cross-border healthcare arrangements or long-term policy. An exception by [Dewachi, Rizk, and Singh, 2018]., argues that "the Treatment Abroad Programme as a 'quick fix' has diverted much of the public funds away from rebuilding the country's local health infrastructure."

## 6. Limitations

Firstly, research in conflict settings is challenging. Context variation also makes studies less consistent or heterogenous to produce conclusive analysis. Another limitation specific to our review included the omission of grey literature. This was mainly due to an abundance of grey literature; such as UN and NGO reports, press releases, and news reports; as well as limited resources to review these sources. Lastly, our review was limited to articles published in English.

## 7. Recommendations

For work in the field of therapeutic geographies to advance, it is important that future research agrees on a set of topics and principles. First, it is important that the field cultivates an enhanced understanding of the spaces where cross-border health systems have developed. For this reason, we suggest that the concept is developed through an empirical lens, mapping real-world instances where cross-border healthcare systems have developed. The geographical distribution of the research subjects we found was relatively limited, and one could imagine similar systems appeared along the Venezuelan border or the Congolese border. Aggregation of such work can allow for more complete mapping and ensuing analysis of the spaces in which healthcare systems change the geographies of health, simultaneously grounding the conceptual work.

Second, it is important that the academic narrative recognises that cross-border healthcare systems experience unique challenges, which are often generalisable across these systems. That means duplication of efforts can be prevented by building on an existing foundation: it is already known, for example, that the cross-border population suffers from delays in presentation and loss to follow-up, and that the cross-border configuration leads to stress on financial resources, change of tasks for medical personnel and novel ethical dilemmas. Instead of describing all the separate challenges to a singular case, it is useful to study one or a selection. To facilitate this approach, we suggest a research agenda based on the themes described in the discussion and summarised in Box 1. If a common framework emerges through which to identify the separate core issues in cross-border medical care, this could significantly improve the quality of analysis of therapeutic geographies.

**Box 1**
Themes for a research agenda.

| Access to health | Logistical challenges, including safety and visa policy |
|---|---|
| | Aggravation of preexisting traditional determinants of access |
| | Type of care available |
| Quality of care | Quality pre-hospital care, including access to first-aid, medical transport, and field hospitals |
| | Quality hospital care, including information transfer and competence of medical personnel |
| | Quality follow-up care |
| Governance of care | Financial structures |
| | Stakeholders and accountability |
| | Short- and long-term policy making |

Thirdly, we strongly suggest the field remains subject to meta-analysis and review. Only through thorough and repeated investigation of the concepts itself, the aggregation of existing work, and further development of the research methods can both the agenda and the field develop the internal consistency and external validity that is needed.

## 8. Conclusion

A better understanding of cross-border healthcare systems is required to inform local practices and develop related regional and international policies. While the reviewed literature provides some highlights on various practices of cross-border healthcare, there are many gaps in available knowledge of this topic, including their geographical distribution, accessibility, quality, and how they can be governed. To address these gaps, our study proposes a research framework outlining key themes and research questions to be investigated by signposting where major research and operational gaps remain. This facilitates well-directed future work on cross-border therapeutic geographies in the context of armed conflict and furthers understanding of a hitherto largely ignored area of the international healthcare system Fig 1.

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## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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