

Cancer care in humanitarian crises

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The humanitarian response to crises has historically involved acute provision of emergency care with a focus on trauma management and the prevention and treatment of acute infections. With regional conflicts lasting for many years resulting in health system breakdowns, conflict-affected populations have become more vulnerable including large numbers of refugees and migrants requiring ongoing support in neighbouring countries. Consequently, management of noncommunicable diseases (NCDs), including cancer, has become an increasingly challenging issue given the complexity of care delivery, limited availability of resources and lack of accurate data on which to base policy decisions.

Humanitarian crisis is a term used to describe a situation of human emergency causing physical, economic or environmental damage that overwhelms a community's potential to manage its population's needs (1). The World Health Organization's Eastern Mediterranean Region (EMR) has been heavily affected by protracted armed conflict with more than 42 million people across the region estimated to require some form of humanitarian assistance in 2020 (2). Countries directly affected by conflict include Syria, Yemen, Libya, Iraq and the Occupied Palestinian Territory, with neighbouring countries such as Lebanon, Jordan and Turkey hosting large populations of refugees. According to data from the United Nations High Commissioner for Refugees (UNHCR), in 2019 the Middle East and North Africa region was the origin of 7.3 million refugees, 90% of whom were from Syria. In addition, the region hosts 11.5 million internally displaced people who may face significant barriers to healthcare access (3, 4).

Cancer care in fragile and conflict-affected countries in the EMR

Of the 21 member states and Palestine (West bank and Gaza Strip) comprising the WHO EMRO area, seven are classified by the World Bank to be affected by high- or medium-intensity conflict, in addition to Lebanon, the Occupied Palestinian Territories and Sudan which are considered to be affected by high levels of institutional and social fragility (5). For populations living in countries directly or indirectly affected by conflict, security and economic situations are dynamic

and intertwined, making regional generalizations impossible and service planning dependent on local needs assessment. Dewachi and colleagues introduced the concept of therapeutic geographies to describe the geographic reorganization of healthcare within and across borders under conditions of war (6). Recent conflicts affecting the region have taken place in urban settings involving various state, non-state and foreign stakeholders. Universally, these have resulted in devastating and enduring effects on public health and healthcare infrastructure (7).

Within the EMR, huge variation exists among countries regarding the availability of data on cancer incidence, stage at diagnosis and treatment outcomes (8). In countries directly affected by conflict and those hosting refugees, data collection becomes even more challenging and deprioritized. Unfortunately, without accurate data on which to base economic analysis and policy decisions, cancer care for the most vulnerable in the region remains chronically under-resourced (9). A glaring repercussion is the lack of progress towards universal health coverage (UHC), a global priority highlighted by the United Nations Sustainable Development Goals (UN SDGs) ensuring that all people receive the health services they need without experiencing financial hardship (10). Based on the Global Burden of Diseases, Injuries and Risk Factors Study (GBD) 2019, a framework for measuring UHC effective coverage has been constructed by weighting each effective coverage indicator relative to its associated potential health gains, as measured by disability-adjusted

Table 1: Fragile and conflict-affected countries of the EMR (5) universal health coverage index and effective coverage indicators for cancer in 2019 reported on a scale of 0–100 (11)

Country	World Bank classification	UHC effective coverage index	Acute lymphoid leukemia treatment	Breast cancer treatment	Cervical cancer treatment	Uterine cancer treatment	Colorectal cancer treatment
Afghanistan	High-intensity conflict	39	5	18	15	18	7
Libya	High-intensity conflict	66	21	65	57	74	47
Somalia	High-intensity conflict	24	5	2	1	1	1
Syria	High-intensity conflict	58	29	69	58	78	53
Iraq	Medium-intensity conflict	58	18	64	53	74	48
South Sudan	Medium-intensity conflict	42	6	9	4	7	4
Yemen	Medium-intensity conflict	49	6	38	30	41	21
Lebanon	Fragile	75	69	85	79	91	68
Palestine	Fragile	61	20	65	52	74	49
Sudan	Fragile	52	9	46	40	47	29

life years for each location-year and population-age group (11). The UHC effective coverage framework includes several indicators related to cancer care including treatment of acute lymphoid leukemia treatment, breast cancer, cervical cancer, uterine cancer and colorectal cancer which can provide some insights into the sub-optimal levels of cancer care in fragile and conflict-affected countries in the region with the caveat that cancer incidence and mortality data from these areas is based on modelled estimates rather than accurate population-based registries (Table 1).

As an inevitable consequence of regional instability, programmes for cancer prevention, diagnosis and treatment in conflict-affected areas have been severely disrupted as resources are diverted to acute healthcare needs. The challenges in providing cancer care services are compounded by damage to facilities, lack of specialized healthcare professionals and limited availability of medical equipment and therapeutics (12, 13). In Gaza, which has been under conditions of protracted conflict for many years, deficiencies in cancer care services and delays in the provision of travel permits required to access treatment outside Gaza have contributed to poor survival outcomes (14). A cross-sectional study of physicians in Syria in 2016 reported that access to specialist physicians, cancer diagnostics and management options within both government-controlled and besieged cities was severely limited (12). On interviewing patients undergoing cancer treatment and their families in Sulaymaniyah, Iraq, Skelton described the challenges faced by patients struggling to obtain care while navigating security issues and fragmented healthcare access. Patients reported visits to multiple hospitals across different cities due to shifting security conditions requiring the sale of personal assets to finance treatment in a mixture of public and private clinics and difficulties obtaining medications from various sources (15).

Resulting from the conflict-induced deficiencies in cancer care services in many parts of the EMR, oncology centres

in neighbouring countries have seen growing numbers of non-refugee patients who travel backwards and forwards across borders to seek care (16–18). A study interviewing patients travelling from Iraq to Beirut, Lebanon, for cancer treatment identified high levels of financial distress with reliance on the sale of possessions, homes and vast networks to raise funds. Thematic analysis identified several drivers for travelling across borders for treatment including the exodus of Iraqi specialist doctors, destruction of hospitals or road blockages, referrals by Iraqi doctors to Lebanese hospitals, geographic proximity of Lebanon and the lack of diagnostic equipment, radiotherapy machines and reliable provision of chemotherapy in Iraq (19). The authors identified deficiencies in communication between healthcare providers and patients regarding cost and duration of treatment required to engage in shared decision-making and management of limited resources. It should be recognized that patients seeking self-funded cancer care across borders from conflict-affected regions represent a vulnerable war-affected population with specific needs.

The literature on the impact of armed conflict on cancer incidence and mortality is sparse, methodologically poor and often contradictory. There is a pressing need to address this relative “data poverty” and for more rigorous longitudinal and cohort studies of populations affected by conflict to inform the development of basic cancer care recommendations and post-conflict cancer control planning (20).

Cancer care for refugees and migrants

Refugees are defined and protected by international law as persons fleeing armed conflict or persecution who are not able to safely return to their country of origin; migrants are defined as persons who would continue to receive the protection of their government if they chose to return to their country of origin (21). The scale and complexity of recent conflict within the EMR has resulted in unprecedented levels of forced displacement and successive waves of refugees

crossing borders. At the end of 2019, Syrians continued to be the largest forcibly displaced population worldwide with the majority of refugees hosted in Turkey (3.6 million). Lebanon and Jordan have also hosted large numbers of refugees with Lebanon, Jordan and Turkey ranking second, fourth and fifth, respectively, when comparing the number of refugees they host in relation to the population size globally. In Lebanon, one in seven of the current population are refugees, putting a huge strain on an already fragile healthcare system (3, 22). Also within the EMR, Pakistan hosts 1.4 million refugees from neighbouring Afghanistan (3).

As the burden of NCDs grows among displaced populations who are in need of long-term healthcare provision and preventative services, management of the protracted humanitarian crises in the region has become increasingly complex and costly (23). Each host country has developed a different strategy depending on local resources. In Jordan and Lebanon, the UNHCR co-ordinates various healthcare providers from both public and private sectors with the assistance of nongovernmental organizations (NGOs). In Turkey, services are covered by the Governmental Disaster and Emergency Management Presidency (AFAD) (22).

Cancer care in particular poses huge financial and ethical challenges for policy makers. More than 98% of Syrian refugees live outside of camp settings and have been displaced for more than 5 years. Despite the fact that only 2% of this population are above 60, programmes that can reduce cancer risk factors and screen for early detection of disease can save lives and resources (3, 24). Abdul-Khalek and colleagues recently published the first population-based modelling study estimating the direct costs of cancer care among Syrian refugee populations residing in Jordan, Lebanon and Turkey. Total cancer care costs for all 4.74 million Syrian refugees hosted in these countries in 2017 was estimated to be €140.23 million using the cost per capita approach, €79.02 million using the age-standardized incidence approach and €33.68 million using the crude incidence approach. Taking the lowest estimated cost and country population and Gross Domestic Product (GDP) and model predictors, the financial burden of cancer care was highest for Turkey (€25.18 million), followed by Lebanon (€6.4 million) and Jordan (€2.09 million) (25).

Accurate data on the incidence of cancer in refugee populations is sparse, however, a report from Turkey, where treatment for Syrian refugees is provided by public hospitals, showed that between 2012 and 2015, 38,243 cancer cases were recorded. With the mean age of the population diagnosed with cancer 43 years, the most commonly diagnosed cancers were breast cancer (28.21%), lymphoid leukemia (8.11%) and colon cancer (6.57%) (26). In Jordan, using age- and sex-specific population-based incidence rates, it has been estimated that

over 850 Syrians are diagnosed with cancer annually, with the most common cancers diagnosed being breast, colorectal and lung cancer (27). While cancer care for Syrian refugees in Jordan was initially subsidized to the same level as insured nationals, this changed in 2014 due to increasing strain on the healthcare system (28). Currently in both Jordan and Lebanon, refugees registered with the UNHCR with complex healthcare needs including cancer treatment are referred to an Exceptional Care Committee (ECC) to decide on treatment funding on a case-by-case basis. Due to funding restrictions, treatment of advanced malignancy is rarely covered. Of the 289 applications for cancer treatment reviewed by the UNHCR ECC in Jordan between 2016 and 2017, only 40% of these were approved and funded; in Lebanon between 2015 and 2017, 357 applications were received of which 79% were approved (24).

With the available data on the expected cancer incidence rates in the refugee population, it is evident that a large proportion of patients are not accessing the treatment they need. In Jordan the King Hussein Cancer Foundation has been able to assist a growing number of adults and children to receive care at the King Hussein Cancer Center however innovative funding solutions and investment in broader regional health system strengthening will be required to improve equitable access to cancer care for both refugees and host populations (9, 27). Investing in community-based measures to increase awareness, address cancer risk factors and promote early detection of common malignancies such as breast cancer has the potential to improve outcomes and decrease treatment costs (29-31).

Unlike adult cancer diagnosis and treatment, paediatric cancer care is generally focused in regional referral centres which may have access to additional funding from both governments and NGOs. The American University of Beirut Medical Center and the Children's Cancer Centre of Lebanon Foundation, in partnership with St Jude Children's Research Hospital and the American Lebanese Syrian Associated Charities, have established three successive funding programmes to treat displaced children with cancer in Lebanon. Through these programmes, 575 children were evaluated between 2011 and 2017, and 311 received direct support demonstrating the importance of a coordinated approach to priority-setting and management, and highlighting the remaining gap in addressing the needs of almost half of the patients with newly diagnosed cancer, and patients with relapsed disease (32). It has been estimated that between 60 and 100 children are diagnosed with cancer each year in the Syrian refugee population in Turkey. Governmental healthcare coverage, communication difficulties, poor adherence to hygiene measures and delays in access to outpatient

medications were identified as significant challenges to the delivery of optimal care (33). A comparative study from a single institution in Turkey has reported inferior survival rates in a cohort of Syrian refugee children with cancer compared to Turkish children underlining the complexity of delivering high-quality care to disadvantaged communities even in settings where inpatient treatment is provided free of charge (34).

Areas for development

Cancer control in humanitarian crises is a hugely challenging topic lacking accurate data on which to inform evidence-based policy recommendations (9, 35). In the context of regional healthcare system fragility, relying on individual countries to address the lack of equitable access to cancer prevention, diagnosis and treatment strategies is unlikely to result in

significant change. All countries directly or indirectly affected by conflict require international assistance to strengthen population-based cancer registries and implement resource-adapted national cancer control plans. Collaborative efforts to improve data collection, impactful research and pragmatic management guidelines should be facilitated to address the growing disparities in cancer outcomes. ■

Disclaimer

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References

- WorldVision. What is a humanitarian disaster? October 2020; Available from: <https://www.wvi.org/disaster-management/what-humanitarian-disaster>.
- UNOCHA. Global Humanitarian Overview 2020. 2020.
- UNHCR. Global Health Trends Forced Displacement in 2019. 2019.
- UNHCR. UN High Commissioner for Refugees (UNHCR), Policy on UNHCR's Engagement in Situations of Internal Displacement, 18 September 2019, UNHCR/HCP/2019/1. 2019.
- Bank W. List of Fragile and Conflict-Affected Situations. 2020.
- Dewachi O et al. Changing therapeutic geographies of the Iraqi and Syrian wars. *Lancet*, 2014. 383(9915): p. 449-57.
- Mowafi H. Conflict, displacement and health in the Middle East. *Glob Public Health*, 2011. 6(5): p. 472-87.
- Znaor A et al. Use of cancer data for cancer control in the Eastern Mediterranean Region: results of a survey among population-based cancer registries. *International journal of cancer*, 2020.
- Ilbawi A, Slama S. Cancer care for refugees: time to invest in people and systems. *Lancet Oncol*, 2020. 21(5): p. 604-605.
- Schmidt H, Gostin LO, Emanuel EJ. Public health, universal health coverage, and Sustainable Development Goals: can they coexist? *Lancet*, 2015. 386(9996): p. 928-30.
- Collaborators, GUHC. Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*, 2020. 396(10258): p. 1250-1284.
- Sahloul E et al. Cancer Care at Times of Crisis and War: The Syrian Example. *Journal of global oncology*, 2017. 3(4): p. 338-345.
- El Saghir NS et al. Cancer Care for Refugees and Displaced Populations: Middle East Conflicts and Global Natural Disasters. *Am Soc Clin Oncol Educ Book*, 2018. 38: p. 433-440.
- Al Waheidi S. Breast cancer in Gaza—a public health priority in search of reliable data. *Ecancermedicalscience*, 2019. 13: p. 964.
- Skelton M, Mula-Hussain LYI, Namiq KF. Oncology in Iraq's Kurdish Region: Navigating Cancer, War, and Displacement. *J Glob Oncol*, 2018. 4: p. 1-4.
- Yusuf MA et al. Cancer care in times of conflict: cross border care in Pakistan of patients from Afghanistan. *Ecancermedicalscience*, 2020. 14: p. 1018.
- Abdul-Sater Z, et al. Cancer Registration in the Middle East, North Africa, and Turkey: Scope and Challenges. *JCO Glob Oncol*, 2021. 7: p. 1101-1109.
- Dewachi O, Rizk A, Singh NV. (Dis)connectivities in wartime: The therapeutic geographies of Iraqi healthcare-seeking in Lebanon. *Glob Public Health*, 2018. 13(3): p. 288-297.
- Skelton M et al. High-cost cancer treatment across borders in conflict zones: Experience of Iraqi patients in Lebanon. *Journal of Global Oncology*, 2020. 2020(6): p. 59-66.
- Jawad M et al. The impact of armed conflict on cancer among civilian populations in low- and middle-income countries: a systematic review. *Ecancermedicalscience*, 2020. 14: p. 1039.
- UNHCR. UNHCR viewpoint: "Refugee" or "migrant" – Which is right? October 2020; Available from: <https://www.unhcr.org/news/latest/2016/7/55df0e556/unhcr-viewpoint-refugee-migrant-right.html>.
- Akik C et al. Host country responses to non-communicable diseases amongst Syrian refugees: a review. *Confl Health*, 2019. 13: p. 8.
- Naja F et al. Burden of non-communicable diseases among Syrian refugees: a scoping review. *BMC Public Health*, 2019. 19(1): p. 637.
- Spiegel PB et al. Cancer in Syrian refugees in Jordan and Lebanon between 2015 and 2017. *The Lancet. Oncology*, 2020. 21(5): p. e280-e291.
- Abdul-Khalek RA et al. The economic burden of cancer care for Syrian refugees: a population-based modelling study. *Lancet Oncol*, 2020. 21(5): p. 637-644.
- Göktaş B et al., Cancer Incidence Among Syrian Refugees in Turkey, 2012–2015. *Journal of International Migration and Integration*, 2018. 19(2): p. 253-258.
- Mansour A, Al-Omari A, Sultan I. Burden of Cancer Among Syrian Refugees in Jordan. *J Glob Oncol*, 2018. 4: p. 1-6.
- Marzouk M et al. "If I have a cancer, it is not my fault I am a refugee": A qualitative study with expert stakeholders on cancer care management for Syrian refugees in Jordan. *PLoS ONE*, 2019. 14(9): p. e0222496.
- Alawa J, Alhalabi F, and Khoshnood K. *Breast Cancer Management Among Refugees and Forcibly Displaced Populations: a Call to Action*. *Current Breast Cancer Reports*, 2019. 11(3): p. 129-135.
- Alawa J et al. Cancer Awareness and Barriers to Medical Treatment Among Syrian Refugees and Lebanese Citizens in Lebanon. *Journal of cancer education: the official journal of the American Association for Cancer Education*, 2020. 35(4): p. 709-717.
- Al Qadire M, Aljezawi M, Al-Shdayfat N. Cancer Awareness and Barriers to Seeking Medical Help Among Syrian Refugees in Jordan: a Baseline Study. *J Cancer Educ*, 2019. 34(1): p. 19-25.
- Saab R et al. Displaced children with cancer in Lebanon: A sustained response to an unprecedented crisis. *Cancer*, 2018. 124(7): p. 1464-1472.
- Kebudi R et al. Refugee children with cancer in Turkey. *Lancet Oncol*, 2016. 17(7): p. 865-867.
- Yagci-Kupeli B, Ozkan A. Syrian and Turkish children with cancer: a comparison on survival and associated factors. *Pediatric hematology and oncology*, 2020: p. 1-10.
- Gheorghe A et al. Economics of Pediatric Cancer in Four Eastern Mediterranean Countries: A Comparative Assessment. *JCO global oncology*, 2020. 6: p. 1155-1170.