

Protecting Non-communicable Diseases Patients during Pandemics: Fundamental Rules for Engagement and the Case of Lebanon

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Abstract: Non-communicable diseases (NCDs) are still the number one killer in the world. Their economic burden is heavy, notably in low-and-middle-income countries. Lebanon is a middle-income country in the Eastern Mediterranean region. The arising COVID-19 pandemic, political and economic instability, inadequate funding, and deteriorated infrastructure have rendered the country a fragile setting, significantly affecting persons with non-communicable diseases. Improving the patient journey during the COVID-19 pandemic and a comprehensive approach to NCD management is important during emergencies. This paper used a quantitative literature review to provide a theoretical framework touching NCDs patients in their journey during emergencies and crisis. It further adopted the Sendai Framework to draw the road for these patients in Lebanon. The ultimate goal is better preparedness and response in case of emergencies and disasters. It calls for a clear and coordinated action plan addressing the challenges posed by NCDs to a resilient country's response. This paper provides an overview of the situation of NCD patients in Lebanon during the COVID-19 pandemic. It suggests strategies to address non-communicable diseases guided by the Sendai Framework's four priorities, based on previous experiences.

1 INTRODUCTION

Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally¹. The World Health Organization (WHO) reports that each year, more than 15 million people die from a NCD between the ages of 30 and 69 years; 85% of these premature deaths occur in low- and middle-income countries. Non-communicable diseases such as cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancer (9.3 million), respiratory disease (4.1 million), and diabetes (1.5 million).

The COVID-19 pandemic has accentuated the vulnerability of NCD patients and weakened that resilience of the public health system. Diabetes, hypertension, and cholesterol levels are among the comorbidity factors that increase the severity of

COVID-19 infection (Zaki et al, 2020), placing a higher risk (Chan et al, 2020) on NCD patients. This risk increase with the lack of appropriate care due to the sudden shift in priorities of the healthcare system and providers, infrastructure disruption, degraded living conditions, inability to operate safely and offer quality care to all patients. Evidently, NCD diagnosis and treatment services were partially or completely disrupted worldwide - Hypertension (-50% decrease), cancer treatment (-45%), and cardiovascular emergencies (-30%)².

The patient journey for NCDs is depicted in five broad touchpoints: awareness, screening, diagnosis, treatment, and adherence with integration of palliative care along the care continuum pathway (Fig 1.). These phases require the development of interventions and policies tailored to the patient's need at these different phases (Devi et al, 2020), which, if disrupted may be fatal to the patients, or

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¹ <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>

² NCD department (May 2020): final results: rapid assessment for NCDs during the COVID-19 pandemic. WHO (2020). The impact of the COVID-19 pandemic on non-communicable disease resources and services: results of a rapid assessment.

introduce risks that yield to an unpredictable outcome. Essentially, the COVID-19 and NCD pandemics exert a combined effect, leaving NCD patients at a higher risk of developing severe COVID-19 complications, and more likely to develop long-term chronic conditions (Nassereddine, 2021).

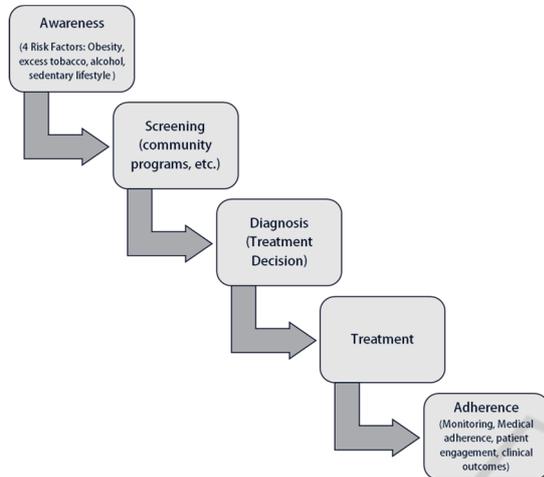


Figure 1: Key Stages - NCD patient journey (adapted from Devi et al, 2020).

1.1 Motivation

The context of our paper is the country of Lebanon. A middle-income country located in the Eastern Mediterranean region, where NCDs account for approximately 91% of all deaths³. The economic growth was slowing since 2011, following the Arab Springs, and the influx of 1.5 million Syrian refugees to Lebanon, abruptly raising the population by 25%. Syrian refugees live in close contact with the host community, and their living conditions are favourable for the epidemic spread to the Lebanese public at large. Inadequate access to health care, and inadequate community awareness levels are vulnerability factors. The relatively high prevalence of non-communicable diseases in this population could also affect the severity of the disease among those infected. Poverty, stigma, and fear of legal consequences are contextual factors that further exacerbate this vulnerability (Fouad, 2021).

Adding to the already failing health sector, the disruptions of the COVID-19 pandemic, and the stressful economic situation, was a massive explosion in Beirut that rendered three major hospitals

inoperable, and other hospitals severely damaged, with more than 300,000 people left without shelter. Consequently, there was a significant decrease in scheduled mammograms, screening colonoscopies, and elective surgeries and follow-up visits. This led to delay in diagnoses or treatments in chronically ill and cancer patients (El Karak, 2021). In fact, 29% of NCD patients had interrupted or rationed their medication before the explosion due to financial problems and medicine shortage (Medecins sans frontieres, 2021).

Components of health ecosystems, encompassing collaborations between health and other sectors must work in synergy to meet the demands imposed by health emergencies⁴. Targeted investments and policy reforms in building the capacity of health systems to effectively manage routine demands can help countries strengthen the effectiveness and coverage of routine health care provision for NCD during pandemics (Rentschler, 2021) and strengthen the resilience of health systems to shocks and pressures. The Ministry of Public Health (MoPH) have not been able to meet the challenges, albeit having developed the national NCD prevention and control plan (NCD-PCP) back in 2016⁵.

With this work, we intend to summarize Lebanon’s response to the pandemic and the disruption of the NCD journey. Then, using guidance from the extant literature, we outline a call to action for the Lebanese communities that draw attention to the case of NCD patients during a Pandemic. *Therefore, we try to answer the question What does the literature recommend as principle strategies that would help address the needs of NCD patients during a pandemic emergency?*

2 APPROACH

This effort was conducted between March 2021 and August 2021, completing a literature search to identify articles within the scope of the NCD journey in Lebanon during the COVID Pandemic. The search included databases such as PubMed, and Google Scholar to look for papers that cover all three contexts and published during and after the year of the COVID-19 pandemic. Searches included keywords such as "COVID-19" AND "Lebanon" AND "Non communicable Diseases" to yield 101 papers;

³ www.who.int/nmh/countries/lbn_en.pdf.

⁴ <https://www.who.int/publications-detail-redirect/9789240029682>

⁵ <https://www.moph.gov.lb/en/DynamicPages/index/2/3687/non-%20communicable-diseases#/en/view/3691/non-communicable-diseases-prevention-and-control-plan-ncd-pcp-lebanon-2016-2020>.

"COVID-19" AND "Lebanon" AND "Non communicable Disease", to produce 326 papers and, "COVID-19" AND "Lebanon" AND "NCD", to identify 118 sources. Papers eligible for review included research studies, review articles, policy papers, opinion articles, and legalbriefs. There were no limitations in term of times and languages. In parallel we retrieve secondary sources of data: the first author includes media stories and articles, blog postings, and magazine articles from the grey literature in the study(e.g., secondary sources from the Ministry of Public Health - MoPH), only when necessary to bridge the information gap in the literature and triangulate authors concepts. Both authors reduced the duplicate articles and reviewthem independently. After isolating 68 articles, they read them in full, then checked for relevance, rejecting patents and citations and restricting the review to papers relevant to the study, which resulted in the retention of 46 articles. That is, authors have found a fewentries in the literature discussing the Lebanon context in general (23 papers). Citing Lebanon example, sixteen articles were found to address NCD in Emergencies (Covid-19 Pandemic specifically). Others covered disaster risk reduction (DRR), Universal Healthcare (UHC), and the NCD journey in low and medium-income countries (LMIC) inferring to the Lebanese context (seven publications). Next, both authors proceeded with the paper to synthesize the findings. Two steps were followed: First, a summary of Lebanon's reaction to the pandemic and the NCD Population was produced (section 3.1). As a second step, the authors identified components of Health EDRM and SENDAI Priorities for Action to provide a basis for a roadmap to strengthening the resilience of health systems (Aitsi- Selmi et al, 2015) and connect the recommendations from EDRM and Sendai in the context of the NCD journey to summarize a call to action in the Lebanese context (section 3.2). Therefore, using these frameworks as a backdrop to our paper, we pave the way to learn from the extant literature and augment actionable examples into these frameworks that would contextually apply to the Lebanese case. We explicate the frameworks' prescriptive nature to connect it to the NCD patient journey. We identify gaps in the Lebanese handling of the NCD journey and develop calls to action based on the frameworks for (section 3.2.). Therefore, we propose a vision under the guidelines of these frameworks to shift focus from disaster response to fundamentals of planning and preparedness. This new lens may be helpful to focus the frameworks on

addressing the risks of NCD in a pandemic (Hung et al, 2021). In a contextual framework, we try to compensate for the lack of evidence by suggesting priorities for action that map to the NCD patient journey. Then, we aim to use learnings from the extant literature, raise public awareness, and provide guidance from DRR frameworks (Health EDRM, SENDAI).

3 PERSPECTIVES FROM THE LITERATURE

COVID-19 response in Lebanon was meager, burdened by compromised healthcare systems, prolonged political unrest, conflict, and humanitarian crisis, poor vital registration systems, suboptimal reporting, and dearth of publicly available data (Nassereddine, 2021). To set the stage for our work in this paper and after consulting a few documents and materials from the MoPH, we summarize the response as follows:

At the onset of the COVID-19 pandemic (Jan 2020), Lebanon saw an increase of 6.8% of social media compared to April 2019, and 68% of the total population were using mobile Apps⁶. The MoPH set up COVID-19 dashboards, for information diffusion and provisioned resources for collecting information required to guide all aspects of the operations⁷. That included communications, risk and needs assessment, priority setting, planning, information management, health operations, and health logistics. Formalizing their pandemic response, the MoPH put in place a regional preparedness and response plan for COVID-19, developed to establish a national plan of action to scale up preparedness and response capacities in Lebanon for prevention, early detection, and rapid response to coronavirus disease 2019. The plan called for screening at Points of Entry (POE) of coming from outbreak countries, provision of PPEs at the health facility level, the designation of additional referral hospitals national coordination mechanisms, and assessment of capacities and gaps for potential local spread and outbreak.

Lebanon has managed to control the virus spread through an initial strict lockdown and confinement measures amid an already struggling economy (Fouad et al, 2021). Nevertheless, the healthcare system has been seriously affected and, the scarce resources have been diverted from the primary healthcare centres (PHCs) supported by the government to the COVID-

⁶ <https://datareportal.com/reports/digital-2020-lebanon>

⁷ <https://covid19.mohp.gov.np/>

19 emergency systems. The result was the interruption of the provision of basic services such as procurement of vaccines, chronic and essential medicines (Rosita di Peri et al, 2020; Hamadeh et al, 2021).

3.1 Lebanon’s Reaction to the Pandemic and the NCD Journey

Only a handful of publications studied and reported the impact of the pandemic on the NCD patient journey in Lebanon. Namely, Hamadeh et al (2020), discuss the low level of readiness of the Lebanese primary healthcare centres during the COVID-19 pandemic to address non-pandemic related diseases. During COVID-19, visits to primary healthcare centers (PHCs) waned to a minimum, and access to essential chronic health services was interrupted. Visits to PHCs for essential services declined by up to 70%. As a result, the most vulnerable NCD population was more likely to defer and postpone care until their condition becomes critical, most often requiring hospitalization (Hamadeh et al, 2021). Elsewhere, Zablith et al (2021) document the complex dynamics of NCD management worsened by lack of governance, the scarcity of financial and human resources, perceptions of care quality, and community trust in services. The COVID-19 pandemic dealt a heavy blow to the country’s health-care system that has been buckling under consecutive politico-economic and security events (Zablith et al, 2021). Karak et al (2021) explain the disruption in terms of lack of rapid access to medications and the need for dedicated care centres for cancer patients to ensure continued treatment and care.

Whilst, touching on the digitalization of mental health services, Fouad et al (2021a) described how Tele-mental health was introduced as a viable solution in times of pandemic especially in low-income settings. The delay in diagnosis and early treatment has a relevant impact and subsequently increases the burden of NCDs. Teleconsultation had become the norm for both Lebanese and Syrian populations as less and less direct in-person services and resources were available (Saleh et al, 2018). The majority of Lebanese physicians increased their use of WhatsApp (80%), phone calls (67%), and email (63%) for their telehealth activities. These activities include reading test results, discussing the patient's case, prescribing medication, and providing public awareness (Helou et al, 2020). The burden of the pandemic had its toll on the NCD journey at all stages (Table 1).

Table 1: NCD Journey in Lebanon – During COVID – 19.

Key Stages - NCD in Lebanon, during COVID – 19
<p>Awareness MOPH - WhatsApp and Facebook broadcast educational videos (Sacca et al, 2020); Individual initiative – APP for weight control and fitness (Bardus et al, 2019); breast cancer awareness (Sacca et al, 2020);</p>
<p>Screening Access to information for screening via mobile devices (Manca, 2015) and EMR systems (Saleh et al. 2018). Tele-mental health a viable solution (Fouad et al, 2021a)</p>
<p>Diagnosis Physicians relied on telehealth activities for diagnosis and treatment (Helou et al, 2020); Teleconsultation had become norm in both the Lebanese and Syrian populations as less and less direct in person services and resources were available (Saleh et al, 2018).</p>
<p>Treatment Physicians relied on telehealth activities for diagnosis and treatment (Helou et al, 2020); lack of rapid access to medications and care center resources (Karak et al, 2021); Low level of readiness of the Lebanese primary healthcare centres (Hamadeh et al, 2020)</p>
<p>Adherence Lack of interoperability between healthcare stakeholders’ systems (FIP, 2019). Lack of rapid access to medications and care center resources (Karak et al, 2021); Learn new supply chain and/or dispensing approaches for NCD medicines (Khoury, 2020); most vulnerable NCD population likely to defer and postpone care (Hamadeh et al, 2021)</p>

Awareness - As the MoPH and the health ecosystem in the country reacted to the pandemic, the NCD population was left unattended, served only by a few individual initiatives, trying to close the gap in awareness and self-care interventions in NCD patients through the promotion of training and education. WhatsApp and Facebook broadcast educational videos raising cancer awareness and the importance of screening (Sacca et al, 2020). By individual initiative, community members have developed applications to help weight control application - WaznApp (Bardus et al, 2019), help individuals achieve their fitness goals ⁸ and raising breast cancer awareness and the importance of screening (Sacca et al, 2020).

Exceptionally, in this case, to curb the mental health issues that resulted from the pandemic, the MoPH developed an extension to the plan that aimed at comprehensively addressing the mental health and psychosocial support (MHPSS) aspects of the COVID-19 outbreak in the country, including

Palestinian and Syrians refugees⁸. Components of this action plan were to: (1) Promote mental health and mitigate COVID-19 related stressors; (2) Support to the quarantined; caregivers, first responders, and mental health patients. However, the plan did not include special provisions for resources to maintain the services for the non- pandemic related chronic diseases. The action plan mainly focused on multiple scenarios for strengthening surveillance and response to COVID-19 and missed the requirements of the primary healthcare activities regarding the vulnerable NCD populations' needs; dynamics of NCD management were worsened by lack of governance, scarcity of financial and human resources, perceptions of care quality, and shaken community trust (Zablith et al, 2021).

Screening and Diagnosis - Telehealth activities took to the mainstream. These activities include reading test results, discussing the patient's case, prescribing medication, and providing public awareness (Helou et al, 2020). Almost half of the Syrian households have a member with an NCD (Sethi et al, 2017). Over 90% of Syrian refugees' households in Lebanon have access to a mobile phone and use it widely (Manca, 2015). A cloud-based EHR system (Sijilli) – meaning "my record" in Arabic, launched in 2018 to gather and maintain medical data for displaced Syrian refugees – which became an essential source of information to care for the needs of the refugees during the pandemic – some of which were NCD patients. Another project (the e-Sahha project) offered the Palestinian refugees the facility to capture information on diabetic and hypertensive care seekers. The project included a weekly diffusion of personalized, educational text messages, providing health information on lifestyle, dietary habits, body weight, smoking, medications, and symptoms of hypertension and diabetes (Saleh, S. et al. 2018).

Treatment - Lebanese primary healthcare centres were taken by surprise, as the COVID-19 pandemic came to exacerbate the already stressed systems (Hamadeh et al, 2020). NCD patients tended to defer and care, at the risk of complications (Hamadeh et al, 2021), before admission to care centres, that dedicated their resources to address COVID-19 patients. Some instances spawned the need for dedicated care centres to treat cancer patients and ensure their continuum of care (Karak et al, 2021).

Adherence - In Lebanon, the lack of interoperability between different healthcare stakeholders' systems is a major concern (FIP, 2019). Barriers are multiple: finding "common languages" between medical records in different hospitals, a significant cost of implementation, ensuring patients' confidentiality, and care coordination between different healthcare providers. NCD patients had to learn new ways to manage their care, and their caregivers were pushed to adopt telemedicine, learn new supply chain and/or dispensing approaches for NCD medicines, adapt new triaging protocols to identify priorities and to care for the most vulnerable, and often redirect their NCDs to alternate health care facilities (Khoury, 2020).

In sum, from the initial stages of awareness, prevention, and screening to the subsequent stages of diagnosis and treatment and ongoing management, the NCD population fought hard to gain access to proper care. NCD patients had to learn new ways to manage their care, and their caregivers were pushed to adopt telemedicine, learn new supply chain and/or dispensing approaches for NCD medicines, adapt new triaging protocols to identify priorities and to care for the most vulnerable, and often redirect their NCDs to alternate health care facilities (Khoury, 2020). It was not until a year later, in February 2021, when the vaccination campaign took hold that the NCD population received some attention. NCD patients took "high priority".

3.2 Preparing the NCD Patient Journey for Disaster Resilience

We start the conversation about disaster risk reduction by referencing the Health Emergency and Disaster Risk Management (EDRM) Framework, published in 2019 by the WHO. The EDRM framework prescribes fundamental components and an approach for all actors in health and other sectors who are working to reduce health risks and consequences of emergencies and disasters (Hung et al, 2021). Extended from the UN Sendai Framework for Disaster Risk Reduction 2015–2030, the EDRM places human health at the centre of disaster risk reduction. The Sendai Framework stipulates that the disaster management cycle is a continuing process with three ultimate goals: mitigating the present disaster effects, achieving a rapid and effective recovery, and acting during the post-disaster phase (Bullock et al, 2013). Disaster planners draw the

⁸ MoPH Action Plan MHPSS response to the COVID-19 outbreak in Lebanon-V1.0 (2020, March).

roadmap for strengthening the resilience of their health systems, while relying on the effective implementation of such framework, which require local, national, regional, and global actions and cooperation between all stakeholders (Aitsi-Selmi et al, 2015). A clear and coordinated action plan addressing the challenges faced by NCD patients before, during, and after disasters will help to mitigate the heightened burden of risks, especially in the context of low and middle- income countries (LMICs) and among their vulnerable populations (Gnanapragasam et al, 2016). Moreover, in 2018, the WHO issued guidance on integrating NCD management in emergency response preparedness (ERP) plans⁹. In the preparedness phase, the guidance emphasized the identification of priority conditions for inclusion in emergency response that outline the pre-emergency profile of NCDs and assess the readiness of the concerned Health Facilities. Coordination plans would be put in place for contingencies, with individualized emergency plans, ensuring the availability of resources, essential medicines, and technologies. At the onset of the emergency, coined as the emergency response phase, the WHO working groups propose integrating NCDs in initial rapid assessments, mapping the service provisioned, and organizing the service delivery that focuses on their care. Finally, a post-emergency phase is recommended to debrief on lessons learned from the crises, strengthen health ecosystem response to the needs of NCD patients with a continuous loop of monitoring and evaluation. In Table 2, we adapt the works of Bullock et al, (2013) et Hung et al (2021), to frame the EDRM context and the priorities for action of Sendai Framework and provide insight into the activities required in the NCD patient journey, during an active disaster.

As a first priority, it is vital to enhance risk governance and better understand disaster risk to reduce the frequency and effects of disasters (Aitsi-Selmi et al, 2015). Ultimately current risks are reduced and, the development of new ones is minimized (Mizutori, March 2020). Developing risk communication improvement strategies can help planners and managers design and implement effective risk management programs (Fathollahzadeh et al, 2021). Effective Risk Communication is critical for health and other sectors, government authorities, the media, and the public. A consistent collection of reliable, strong data from past and present inform projections to build good strategies and interventions

for the future; the ultimate result is to reduce disaster risks and improve the safety and functionality of critical infrastructure (Mizutori and March, 2020). Operative information and knowledge management include risk assessment, surveillance, early warning, information management, technical guidance, and research.

Table 2: Four Priorities for action for NCD – Adapted from (Bullock et al, 2013 & Hung et al, 2021) and our literature review.

<p>Priority 1. Understanding disaster risk:</p> <p>Effective Risk Communication (health and other sectors, government, media, and the public)</p> <p>Operative information and knowledge management (risk assessment, surveillance, early warning, information management, technical guidance and research)</p> <ul style="list-style-type: none"> — <i>Patient engagement (identify priority conditions for inclusion in emergency response, outline pre-emergency profile of NCDs and assess readiness of health facilities).</i> — <i>Leveraging technologies: Encourage community-based screening for NCDs w/ digital tools to scale level of care.</i>
<p>Priority 2. Strengthening disaster risk governance:</p> <p>Policies, strategies and legislation that define structures, roles and responsibilities of governments and other actorsthat strengthen capacities (incl. care costs for NCDs)</p> <ul style="list-style-type: none"> — <i>Patient engagement with care providers and other stakeholders in planning and crisis management.</i>
<p>Priority 3. Investing in disaster reduction for resilience:</p> <p>Human resource plans (staffing, education training).</p> <p>Financial resources to supports implementation of Health EDRM activities, capacity development and contingency funding for emergency response and recovery.</p> <ul style="list-style-type: none"> — <i>Include contribution from the whole care team. (pharmacists, etc.) to provide focused interventions, specialised counselling and care coordination</i> — <i>Health infrastructure and Logistics that includes supply chain of essential NCD medicines.</i> — <i>Patient engagement and coordination for contingencies, with individualized emergency plans (NCD patient profiles).</i> — <i>Leveraging technologies: “care anywhere” concepts</i>
<p>Priority 4. Enhancing disaster preparedness:</p> <p>Strengthen the capacity of local health workforce and inclusive community-centered planning and action –</p> <p>Establish monitoring and evaluation to constantly assess progress and provide feedback for managing risks and capacities and fine-tuning of strategies.</p> <ul style="list-style-type: none"> — <i>Patient engagement in Post Emergency Debrief to strengthen response to needs of NCD patients</i> — <i>Integrate NCD patients in initial rapid assessments and organizing the service delivery that focus on their care.</i>

As an example, community-based screening for

⁹ <https://apps.who.int/iris/handle/10665/272964>

diabetes and hypertension that leverage digital tools may advance the level of care and avail these services at scale, for NCD patients screening (Saleh et al, 2018) even during disasters. Here we echo the recommendations of Devi et al (2020) that patients and care providers ought to collaboratively design their care pathways with the inclusion of “care anywhere” concepts leveraging advancements in technology; among those, the support of home monitoring, optimized accurate diagnosis, personalized care plans, and facilitated timely intervention through mobile devices and integration of digital portals. The resilience of services away from the traditional setting would bring continuity of care in the face of emergent disruption.

Priority two calls for strengthening disaster risk governance. It is critical to invite all stakeholders to partner together, with the ultimate goal of using and implementing all instruments to mitigate disaster risk (UN Office for DRR, 2015). NCD stakeholders are part of this planning and crisis management group. Aside from risk reduction, the target of this group is to improve economic, social, health, and environmental durability. Agencies must implement policies, strategies, and legislation that define the structures, roles, and responsibilities of governments and other actors including strategies for strengthening Health EDRM capacities and related services.

Priority 3 calls on investing in disaster reduction for resilience. Integration of primary, secondary, and tertiary healthcare systems into disaster risk management becomes vital for NCD patients to shift towards alternate, well-prepared and well-resourced healthcare services since the essential healthcare systems and their workers are more engaged in the containment of disaster, as happened during the COVID-19 pandemic. This includes Data collection and assessment for NCD patient profiles, as well as reviewing the national essential medicines list to maintain fluidity in the drug supply chain (Slama S et al, 2017).

Supporting primary healthcare professionals and training them is important to achieve this shift. Planning of human resources is necessary, which includes staffing, education, and training across the spectrum of capacities at all levels, and the occupational health and safety of personnel. Some recommend increasing the involvement from the whole care team, including pharmacists that build on the key roles they already play as primary healthcare professionals in the community to provide focused interventions, specialized counselling, and care

coordination, improving patient engagement to achieve better outcomes (Pinto et al, 2020). Financial resources to support implementation of NCD support activities, capacity development, and contingency funding for emergency response and recovery. Investments are also required for health infrastructure and logistics that focus on safe, sustainable, secure, and prepared health facilities, critical infrastructure (e.g. water, power), and supply systems to sustain the care ecosystem for NCD patients, in continuity without compromise. Considerations for NCD patient-centered care include the best practices to ensure management sustainability in the most collaborative and productive ways between healthcare stakeholders and patients.

Priority 4 emphasizes on improving preparedness for effective response and on "Building Back Better" in recovery, rehabilitation, and reconstruction. The post-disaster phase evaluation of emergency response to NCDs is critical to "Building Back Better". This evaluation will "build" the road to strengthening the NCD surveillance system, implementing strategies to prepare better in case of new emergencies, and incorporating NCDs into government budgeting and plans (WHO, 2018). To alleviate the disaster's effects on NCD patients, it is essential to strengthening the Lebanese national good governance to include NCDs in national disaster plans. A robust public health surveillance system will spot indicators that identify vulnerable groups (NCD patients in the case of the COVID-19 pandemic, among others), for further Emergency and Disaster Risk Management (EDRM), planning (Law, 2019). Further, a focus on a systemic approach to strengthening the capacity of the local health workforce and inclusive community-centred planning and action for the wellbeing of the vulnerable NCD population in a pandemic situation.

3.3 NCD Patient Engagements in Disaster Planning

A comprehensive response to NCD management in emergencies that may place a large demand on resources is not trivial. Often, NCD patients find themselves at the lower priority as aspects of non-communicable disease control become inadequate to reduce the potential risk of morbidity and mortality.

Findings from our review have stressed the engagement of NCD patients in the planning and preparedness for disasters. We, therefore, stress the importance for policymakers, communities, and individuals to give adequate attention to disaster risk

reduction (DDR), specifically to include the needs of NCD patients. During a pandemic, it is critical to focus the resources available on the containment of the pandemic while also continuing to support the NCD patient journey. The strengthening of health infrastructure and logistics are important to build that focus on safe, sustainable, secure, and prepared health facilities, critical infrastructure (e.g. water, power), and supply systems to support the complete Health ecosystem. However, this must include, for instance, reviewing the national essential medicines list to maintain fluidity in the drug supply chain for NCD patient journey support.

NCD patients and care providers are stakeholders in the planning and management of the crisis. Patient engagement in the coordination for contingencies, with individualized emergency plans (NCD patient profiles) ensures that adequate resources, essential medicines, and technologies are available upon need. NCD patients must participate in the elaboration of a clear and coordinated action plan addressing the challenges faced by NCD patients before, during, and after disasters. This planning effort identifies priority conditions for inclusion in emergency response that outline the pre-emergency profile of NCDs and assess the readiness of the concerned health facilities. Further, the finding of this study reinforces a recommendation that NCD patients engage in post-emergency debrief activities on lessons learned to strengthen the response to the needs of NCD patients in the next emergency events with a continuous loop of monitoring and evaluation.

3.4 Leveraging Technology Tools

The development of an action plan for NCD patients must leverage solid tools for collecting reliable data, such as electronic medical records (EMR / EHR), strengthening national healthcare and policies, in addition to the capacity of the medical body and institutions. Technologies that provide for the concept of “care anywhere” leveraging advancements in telemedicine, for instance, become necessary tools in the success of the NCD journey continuum. Namely, the support of home monitoring, optimized accurate diagnosis, personalized care plans, and facilitated timely intervention through mobile devices and integration of digital portals. Additionally, community-based screening for diabetes and hypertension that leverage digital tools may advance the level of care and avail these services at scale, for NCD patients ‘screening and early detection. This further contributes to reducing the demand for acute care. Additionally, empowering individuals through

educating them about different self-care interventions can mitigate the effect of the disaster on their health. They must strive to learn how to use mHealth applications and web-based technologies. Wearable devices and teleconsultation are ways to maintain a connection with their healthcare providers. Resilience in disaster management helps the country to respond to and to recover from it in a better way. Investing in technology is an opportunity that can optimize the country's response to future disasters. Lebanon must learn from this pandemic to better prepare for any future disaster and to establish strong policies for the final target citizens and community.

4 RECOMMENDATIONS

The Lebanese government and community partners should pay immediate attention to develop an action plan and strategies where vulnerable populations notably NCD patients are included in the response and mitigation efforts. Planners and practitioners must therefore:

- 1) Establish an overall coordinated approach to develop effective risk assessment and communication plans that include both public and private sectors (MoPH, primary healthcare providers, community and media) with the consult and the participation of key stakeholders in the NCD patient journey.
- 2) Provide means to collect and diffuse operative information that aid in risk assessment, surveillance, early warning, information management, technical guidance, and research. Emphasize transforming knowledge to policy to strengthen the structures and response mechanism to serve specific needs of NCD patients throughout their journey.
- 3) Define clear roles and responsibilities with a rapid response plan that includes contingencies to care for NCD patients – for instance, plans that encourage community-based screening for NCDs w/ digital tools to scale the level of care and set up the provisions necessary for continuity of care in the time of stress on the health ecosystem.
- 4) Strengthen capacities, in addition to funds and resources set aside for the care of NCDs in their journey. Education and training would be included in the plan to make sure that the readiness for response and care of the NCDs.
- 5) Augment diagnostics centres capabilities to take on the added burden during emergencies,

through scalable resource planning – with the ability for the government to unlock assistance in funding and resources.

- 6) Equip treatment facilities with telehealth and other scalable technologies, potentially, standing up mobile clinics to increase access to care.
- 7) Develop the ability to muster other supportive functions and volunteers in the health ecosystem, such as pharmacists and informal carers, to alleviate the burden on the primary care function.
- 8) Optimize the logistics supply chain. The plans must account for logistical support to provide an adequate flow of medicines and required treatment for the continuity of care for NCD patients. Human, financial, and supply chain resources must be ready to scale to the required capacity.
- 9) Finally, establish monitoring and evaluation cycles that integrate NCD patients in rapid assessments and organizing the service delivery that focuses on their care.

We, therefore, call on the responsibility of the disaster planners to include NCD patients in response and recovery planning. They are informed and pivotal stakeholders. Leverage technology such as portals, integration tools, mobile and telehealth, supply chain, and tracing technology to facilitate the identification, planning, communication, and delivery of care - as “care anywhere”.

5 CONCLUSION

The Lebanese health system is fragile and lacks a sustainable preparedness to build a strong future considering the vulnerable populations. As we aim for Universal Health Coverage while protecting the vulnerable, it is crucial to accompany them during their disease journey, in periods of peace and disasters. NCD patients have been the most hit by the COVID-19 pandemic then later on with the severe shortage of medicines resulting from the economic situation. Structured guidelines and considerations under the Sendai framework priorities will build a strong ground for preventing disruptions of the different stages of the NCD patient journey. The success of this action plan is the contribution of all involved stakeholders under the umbrella of good governance and the integration of the NCD care in emergency preparedness and responses.

Our work reviews the extant literature and draws the connection between theory and practice. We summarize what is in the literature and identify a

serious gap in scientific studies that would improve the NCD journey. Potentially, further research could explore the level of resources required in order to support the underserved NCD patients in an effective response, given certain contexts, during abnormal situations, as pandemics, etc.

In conclusion, our contribution is timely and primarily targeted towards the practices of health disaster planning and response. Moreover, our paper suggests the broad lines of such response strategy and identifies key initiatives that must become priorities in emergency response that includes provisions for protecting NCD patients during pandemics (Fig.2).

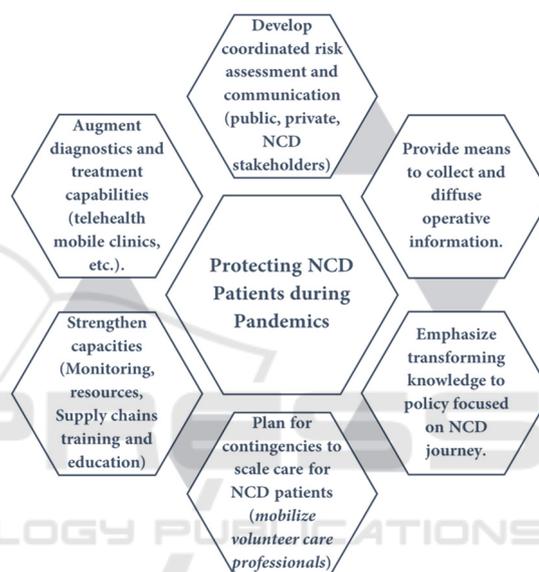


Figure 2: Key priorities for protecting NCD patients during a pandemic (by the authors).

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