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Healthcare delivery in Lebanon: a critical scoping review of strengths, weaknesses, opportunities, and threats

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Abstract

Background Lebanon, an Eastern Mediterranean country with a lower-middle income status, that once boasted a health care system that was functional despite its challenges and complexity. However, it has faced a series of crises—economic, an influx of refugees, political instability, and recent sanctions—that have significantly impacted its aim, principles and values that has impacted upon its ability to function. The objective of this study is to delve into the health service delivery within the Lebanese system and conduct a SWOT analysis (assessing strengths, weaknesses, opportunities, and threats).

Methods We conducted a scoping review, examining literature related to the Lebanese health system and its performance in delivering healthcare services. We followed the Arksey and O'Malley framework, which involves six key phases: identifying the research question, identifying relevant studies, study selection, charting the data, collating, summarizing, and reporting the results, consultation.

Results Despite Lebanon grappling with multiple crises in recent years—such as the COVID-19 pandemic and economic downturn—the health system has demonstrated resilience in service delivery. However, challenges persist. Healthcare providers, including physicians and nurses, must address these issues. Additionally, economic and political crises pose threats that have necessitated significant changes in healthcare service delivery.

Conclusion In the system of healthcare in Lebanon, there have been remarkable achievements, but continuous attention by healthcare providers and the Ministry of Public Health (MoPH) is critical. Economic and political challenges exert constant pressure on service delivery and thus reveal a need for strategic changes, most importantly in health financing if Universal Health Coverage (UHC) is to be attained. Proper resources to strategic reform and system implementation in all parts of the country to ensure equitable access and quality care that is sustained are obligatory.

Keywords Healthcare delivery, Health services, Lebanon, Scoping review, SWOT analysis

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Introduction

For over two decades since the end of Lebanon's civil war, the country's healthcare system (HS) has struggled with deep-seated structural issues, particularly in its financial aspects [1, 2]. Despite being described as a system of excellence with inequities, where high-quality medical services coexist with inefficiencies, the Lebanese HS has been plagued by a convoluted and often unproductive framework [1, 2]. The primary challenges facing the system are predominantly financial in nature, characterized by a heavy reliance on the private sector, which has resulted in significant inequalities in access to healthcare services among different socio-economic demographics [3].

Since 1990, Lebanon has maintained a relatively good HS, with a wide range of medical services, mostly well-managed within the private sector. The National Social Security Fund (NSSF) has contributed to healthcare financing, covering a significant portion of costs for private consultations, medications, and hospitalizations. However, this reliance on the private sector has led to further consequences, including perpetuating inequality and inefficiency [1–3]. Reports from organizations like ESCWA [4] and academic research in "Global Health Action" and "Social Science & Medicine" [5, 6] highlight the financial structure's favoritism towards private health providers, draining public resources and hindering investment in public health infrastructure.

The NSSF's coverage of private medical consultations, medication, diagnostic testing, and hospitalization services for most of the working population has inadvertently empowered private health providers, who receive 80–90% of patients' costs [2]. The World Bank [7] has pointed to the failures inherent in this system, including overreliance on private sector funding and low capacity of public hospitals, perpetuating inefficiencies and inequities. Documentation from the Lebanese Ministry of Public Health supports the fact that resources are misallocated, benefiting the private system and hindering progress in the public hospital sector [7].

Despite some successes, such as a comprehensive network of equipped hospitals, improved medical education, and high standards in specialized disciplines like cardiology, oncology, and neurology, the healthcare sector in Lebanon faces deep-rooted problems [8]. The country's health status has remained stagnant due to socio-economic disparities, lack of health coverage, poor infrastructure, and political instability, preventing adequate healthcare for the majority of the population [9, 10]. The economic decline in 2019, COVID-19 pandemic, and influx of Syrian refugees have further strained the system, reducing public and private funds for healthcare services, and exacerbating the shortage of medical supplies, equipment, and personnel [11].

Reports from global bodies like UNICEF [6] and the Assessment Capacities Project [12] highlight the abysmal state of Lebanon's HS, emphasizing that challenges extend beyond the economic crisis. The NSSF now covers only 10% of healthcare costs, with beneficiaries shouldering 90% of the costs. Out-of-pocket expenditure for healthcare has grown from 33.1% to over 85% in 2023 [13]. The availability of essential medications has decreased significantly, with pharmacy stocks dropping by 50% since the beginning of the economic crisis, leaving 70% of the population unable to access essential services [14].

This literature review aims to examine the SWOT analysis of the Lebanese HS, elaborating on challenges and opportunities. A comprehensive review of published literature provides insight into the factors contributing to the system's resilience and vulnerability. The goal is to identify targeted interventions to address the system's weaknesses, creating opportunities for progression and improvement through well-designed policies, ultimately establishing a more resilient and equitable HS for Lebanon.

Methods

We conducted a scoping review, examining literature related to the Lebanese health system and its performance in delivering healthcare services. We followed the Arksey and O'Malley framework [15], which involves six key phases, as below:

Stage 1: Identification of research questions

The review aimed to address the questions that follow: What are the strengths, weaknesses, opportunities, and threats of primary, secondary, and tertiary HCS in Lebanon? In addition, what recommendations are necessary at each of these three levels for health care delivery to be improved?

Stage 2: Identification of relevant studies

A thorough literature search was carried out using the databases of PubMed, Scopus, and Web of Science. A broad and inclusive review of available literature was ensured by way of a comprehensive search strategy that combined various terms related to healthcare, HS, and Lebanon. Report and policy document grey literature was also included in the review of literature. From this, all the identified literature was downloaded into Zotero to systematically eliminate duplicates. Afterwards, titles and abstracts were screened for relevance against predefined inclusion criteria, assuring that only relevant studies to the research questions would go forward into the final analysis.

Stage 3: Study selection

Eligibility criteria

This review sought to obtain evidence on the strengths, weaknesses, opportunities, and threats (SWOT) in healthcare delivery within the Lebanese HS. The levels of care included primary, secondary, and tertiary health care centers and other sectors that offer HCS in Lebanon. Only peer-reviewed articles, as well as gray literature, consisting of government reports, policy documents, and consultants' reports, were included for the review. This assured that the capturing of recent trends and developments was done while excluding older sources that might be less relevant. This period has been chosen to reflect the important changes that have taken place in the HS over the last two decades.

Selection of articles

The search results were exported into the reference management software Zotero. First, titles were screened for eligibility based on the predetermined criteria. After those were selected, the abstracts of the studies were reviewed again for relevance and inclusion criteria. The studies that passed this stage were saved and their full texts assessed independently for eligibility. Duplicates had been removed in this process. The reference lists of retrieved articles were manually screened for any additional studies not captured by the initial search to ensure comprehensive coverage.

Keywords for search

"Lebanon healthcare", "primary health care Lebanon", "secondary health care Lebanon", "tertiary health care Lebanon", "health system evaluation", and "healthcare challenges Lebanon, among others, all relating to the fields of healthcare delivery and the Lebanese health system.

Relevance criteria

Relevance was judged based on a study's capability of addressing the research questions relevant to strengths, weaknesses, opportunities, and threats in healthcare delivery in Lebanon. Title and abstract evaluation took place at three stages: (1) Title: Initial screening to exclude studies irrelevant or with clearly no relationship to the field under study. (2) Abstract: At this stage, the detailed review ensured the focus of the study was relevant to the objectives of the review. (3) Full Text: Final verdict on the fact that it delivered valuable insight into the current status and challenges of the Lebanese HS and contributed to the understanding of possible improvements.

Stage 4: Charting the data

In this stage, the information extracted from the literature was meticulously analyzed to identify and categorize key aspects of HCS in Lebanon, focusing on its strengths, weaknesses, opportunities, and threats. The process involved several steps:

Data extraction and organization

Each study was carefully reviewed to extract relevant data, including details such as the first author, year of publication, publication type, study objectives, assessed dimensions of the conceptual framework, methods used, and a summary of findings. This information was then systematically organized into a detailed table.

Verification and accuracy check

To ensure the accuracy of the extracted data, each entry was cross-checked against the original sources. This verification process involved comparing the extracted information with the original study reports to confirm correctness and resolve any discrepancies or ambiguities.

Summary table creation

Following the accuracy check, a comprehensive summary table was created using Microsoft Word. This table was designed to clearly present the key findings related to the strengths, weaknesses, opportunities, and threats in healthcare delivery, as well as recommendations for improvement (Appendix A).

Stage 5: Collecting, summarizing, and reporting results

The data extracted from the literature were summarized based on the dimensions of the SWOT analysis of service deliver by three levels of care and reported in a Table. The finalized summary table was prepared for publication, ensuring that it was both clear and precise. The final document underwent a review to confirm that it met the necessary standards for clarity and completeness before dissemination.

Stage 6: Consultation

The results extracted from this review and reported in the mentioned Table, were consulted with several experts in Lebanon, in addition to some of the academics in the relevant file. Final revisions were made accordingly and Table 1 was finalized.

Results

In this scoping review study, 48 studies were included [1–14, 16–48], and the extracted data from these studies have been described in a Table in Appendix A. Figure 1 outlines the flow of studies through the inclusion process and Table 1 provides a summary of results. Review of the literature revealed 4 major thematic domains, based on the purpose of the study. Below a summary of the main results extracted from the review study are presented by the level of care. By examining these

Table 1 Summarized results of SWOT analysis of service deliver by level of care

Primary care

Strength	Weakness	Opportunities	Threats
1. Service Readiness at PHC: • Highest readiness for non-communicable disease management. • Followed by general medical, pediatric, dental, and finally reproductive and maternal services. 2. Government Support: • National network of PHC centers provides reduced-cost consultations and free chronic medications and vaccines to beneficiaries across Lebanon. 3. Accreditation and Quality: • Accreditation in PHC associated with improved delivery of healthcare and quality. • Increased customer satisfaction and patient visits reflect quality improvements. 4. Sustained Service Provision: • Healthcare delivery sustained at all levels during the crisis. • Primary health care centers and hospitals (public and private) remained operational. 5. Integration and Resilience: • Integration of non-communicable disease management within primary health care progressed despite the crisis. • Lebanon's HS maintained service delivery for refugees and citizens, preventing diseases and improving morbidity and mortality levels despite limited system inputs. 6. High Patient Satisfaction: • Remarkably high patient satisfaction with primary healthcare services in Lebanon	1. Refugee Burden on PHC: • Unprecedented challenge due to the burden of refugees on the PHC network. 2. Budget Allocation: • MOPH allocates only 5% of its budget to preventive PHC services. 3. Health Human Resources: • Shortage of FM physicians at PHC centers. • 20% of surveyed PHCs lack registered nurses as required by national standards. • Urban-rural disparities in health human resource availability. 4. Accreditation and Quality: • PHC centers are early in preparation for accreditation. • Lack of quality improvement plans and irregular review of guidelines [16]. • An incident reporting system and care provision summaries are lacking, which hinders the monitoring and improvement of care quality [17]. 5. Service Accessibility and Costs: • Not all PHCs offer medical imaging and blood exams; patients often pay out of pocket. 6. Unfair Treatment and Exclusion: • Witnessed unfairness in service delivery (access to medications, appointments, financial aid). • Exclusion and empty promises reported by respondents with diabetes and lower limb amputation. 7. Health Promotion and Prevention: • Lifestyle counseling and prevention services not accessible. • Agreement on need for health promotion and primary prevention activities across participant groups. 8. Mental Health: • Lack of training for PCPs to identify and treat mental disorders	1. Diverse Funding Sources: • The Lebanese HS benefits from a variety of funding sources, including public funds, private sector investments, and international aid. This diversity allows for multiple conduits for service delivery and the potential to leverage various financial resources to improve primary care services [18]. 2. Patient Experience: • Despite limited diagnostics and poor risk communication options, patients find the PHC more accessible and affordable than other services. 3. Therapeutic Drug Policy: • Lebanon has a therapeutic drug policy that ensures the importation of all essential medications as specified by the WHO. This policy provides a framework for maintaining the availability of critical drugs and could be leveraged to improve medication access and management within the primary care system [19]. 4. Sustained Financing: • Throughout the crisis, the Lebanese HS maintained financing for services at primary, secondary, and tertiary care levels. • MOPH contracts with primary health care centers were preserved. 5. Efficient Resource Utilization: • The HS efficiently utilizes financial resources. • Further investment in this area can significantly impact health outcomes. 6. PHC Prioritization: • Healthcare prioritized at the PHC level, emphasizing quality of care. • A shift from parallel services to intensified support through the expanding MOPH PHC network. 7. People-Centered Approach: • Efforts to optimize PHC service provision and move towards a people-centered HS.	1. PHC Accreditation Challenges: • High staff turnover, heavy workloads, and the absence of a structured referral system pose significant obstacles to implementing and maintaining PHC accreditation standards. These challenges can hinder efforts to meet quality benchmarks and improve service delivery [19]. • Limited financial resources hinder recruitment of specialized staff and equipment purchase for accreditation. 2. Refugee Burden: • The unprecedented burden of refugees on the PHC network is a significant challenge. 3. Inadequate Mental Health Services: • A 2009 study reveals that mental health services in Lebanon are inadequate and lack necessary attention.

Table 1 (continued)

Secondary Care

Strength	Weakness	Opportunities	Threats
1. Sustained Health Care Provision: • Healthcare delivery has been sustained at all levels throughout the crisis. • Hospitals (public and private) have remained operational. 2. Maternal Health Improvements: • Significant decrease in maternal deaths in Lebanon, with a 13% reduction in 2015. 3. Essential Equipment Availability: • Infusion pumps and fetal monitoring equipment are readily available across both public and private sectors in Beirut and other regions for safe maternal and newborn health care. 4. Skilled Attendant for Childbirth: • Childbirth with a skilled attendant is almost universal in Lebanon. 5. Response Plans and Capacities: • Local-level response plans and capacities are being further developed, especially in areas at higher risk of outbreaks.	1. Psychiatrist Input: • Lack of expert input by psychiatrists in organizing mental health care at the public health level. 2. Complex and Privatized HS: • For more than 3 decades – the structure of the financing system is a major flaw whose impacts have helped to create a perpetual crisis to date [20, 21]. • Highly privatized HS in Lebanon poses barriers to ensuring accessible, affordable, and quality healthcare services. • 70% of the healthcare facilities in Lebanon are privately owned, as of 2023, less than 30% of the population is properly covered by health insurance [12, 20]. • Affects both refugees and host communities. Most of the population—nearly 1.5 million Syrian refugees and over 200,000 Palestinian refugees—to have minimal access to main healthcare services [12]. • 60% of all health expenditure being out-of-pocket and hence not affordable to many. • 45% of Lebanese citizens delayed or did not seek required medical treatment because it was too expensive [22]. 3. Bed Availability and Surgery Cancellations: • Non-availability of government-contracted beds leads to majority of surgery cancellations. • In the year 2022, approximately 40% of the surgeries scheduled for public hospitals were canceled because beds were not available [22, 23]. • At Rafik Hariri University Hospital, out of the 3,000 surgeries planned, nearly 1,200 were postponed or canceled due to the no availability of beds. • The situation is very grave, especially during peak winters when bed occupancy rates often exceed 90%, leaving very little room for fresh admissions and urgent surgery cases [22]. 4. Patient Discharge Instructions: • Limited patient understanding of discharge instructions. • Low compliance with recommendations. • 70% of patients discharged from public hospitals did not fully understand the instructions given to them, contributing to poor health outcomes and increased readmission rates [12]. • 100% of participants did not receive complete discharge instructions [12]. • Only 30% of these patients adhered to their prescribed treatment plans, highlighting the urgent need for improved communication and patient education in the discharge process [12]. 5. Vulnerable Lebanese Individuals: • Those not covered by existing health insurance funds struggle to afford outpatient care at private clinics. • Access pharmacies or civil society-run health centers instead.	1. Charities and NGOs for Older Adults: • Many charities, associations, and NGOs are oriented to providing vital services for elderly people, on the list are the Lebanese Red Cross and Caritas Lebanon. In these, the elderly has been aided in a plethora of settings: health and social support and rehabilitation settings [23]. • Caritas Lebanon provided over 10,000 free consultations and distributed more than 15,000 packs of medicine to the elderly within 2022 alone [24, 25]. • The Lebanese Red Cross operates various projects that aim at enhancing health and well-being for older people. This has been benefiting over 8500 people during the past year [25]. • 2. KPIs for Hospital Performance: • Key Performance Indicators have recently been more diffuse in hospitals of Lebanon to evaluate and improve health quality. Those would estimate a broad range of performances: patient-centered care, clinical effectiveness, safety, staff orientation, efficiency, client satisfaction, client flow and load, responsive governance, clinical practices, and provider satisfaction. • For instance, implementing KPIs at AUBMC decreased patient waiting time by 20% and augmented overall patient satisfaction by 15% within a year. Another nationwide study in 2021 showed that hospitals operating according to KPI frameworks reported 25% improvements in clinical outcomes against a 30% drop in medical errors in institutions that didn't apply such frameworks [12]. • In addition, continuous monitoring of KPIs at Rafik Hariri University Hospital increased staff satisfaction by 10% and operational efficiency by 35% over the past three years. The continuity of follow-up founded on KPIs additionally empowered better governance practices, resulting in greater responsiveness and efficiency of management for the hospitals.	1. Financial Challenges: • Payments shortfalls for purchases. • In 2023, public hospitals reported a payment shortfall of approximately 30% for essential medical supplies and equipment, leading to delays in procurement and compromised patient care [26]. • Rising costs due to various factors. Healthcare costs in Lebanon have surged by over 50% since 2019, driven by factors such as the devaluation of the Lebanese pound, inflation, and increased operational expenses. For example, the cost of medical supplies has tripled, making it difficult for hospitals to maintain adequate stock levels [27]. • Regulatory burden, including accreditation requirements. Increased operational costs by an estimated 20%. Many hospitals struggle to meet these requirements due to limited financial and human resources, which in turn affects their ability to provide quality care. • Worker shortages, particularly nurses. As of 2023, the nurse-to-patient ratio in public hospitals has dropped to 1:20, far below the recommended standard of 1:6[22, 27]. 2. Institutional Policies: • Lack of explicit healthcare institutional policies mandating training or continuing medical education for providers in quality improvement and patient safety. • In 2022, only 15% had formal policies requiring ongoing training in these areas. • Less than 25% of healthcare providers participated in CME programs focused on patient safety and quality improvement. • 10% of all hospitalizations in 2023 involved some form of preventable adverse event. 3. Quality Monitoring: • Absence of national standardized quality indicators to effectively monitor progress and ensure quality healthcare delivery. • As of 2023, Lebanon does not have a unified national framework for quality indicators, which hampers the ability to consistently measure and compare healthcare performance across institutions [12]. • A recent assessment revealed that 85% of hospitals lack standardized metrics for evaluating clinical outcomes and patient satisfaction. • 40% of hospitals do not track key performance indicators related to infection rates and readmission rates, crucial for identifying areas of improvement and ensuring high-quality patient care.

Table 1 (continued)

Tertiary Care

Strength	Weakness	Opportunities	Threats
1. Children's Cancer Center (CCCL): • Located in Beirut, Lebanon. • Provides full treatment for 72 Lebanese children with newly diagnosed cancer annually, regardless of their ability to pay. 2. Accessibility for People with Disabilities: • Hospitals and health institutions are sufficiently accessible for individuals with physical disabilities. • Equipped with ramps and elevators. • Health care providers assist people with wheelchairs when needed.	1. Healthcare Institutions in Lebanon: • Semi-autonomous public secondary and tertiary healthcare institutions. • Expensive referral care. 2. Drug Shortage: • National tragedy and a threat to national security. • Projected to last for years, impacting medical management and patient care. 3. Barriers to Dental Care: • Economic factors pose barriers to dental care for children. 4. Health Insurance and Hospital Expenses: • Lack of private health insurance for people with diabetes and lower limb amputation. • Hospital expenses covered by patients themselves. 5. NGOs for Older Adults: • Fragmented and non-sustainable services provided by NGOs for older adults. • Services include medical care, home-based nursing, psychosocial assistance, entertainment, and more. 6. Challenges in Private Insurance: • Costly private insurance in Lebanon. • Coverage refusal for those above 70 years at initial enrollment. 7. Lack of Uniform Pension Plan: • No uniform old age/retirement pension plan in Lebanon. • Unemployed individuals, mostly women, lack pension plans or health coverage.	1. Hospital Services Planning: • Hospitals are planning to provide services such as cardio, open heart, and dialysis. 2. Specialist Engagement: • Specialists consistently follow up on medical news through conferences abroad.	1. Pediatric Heart Surgeon Exodus: • Majority of pediatric heart surgeons left Lebanon for more stable careers in the USA and Europe. • Resulted in only eight pediatric cardiologists and five pediatric cardiac surgeons remaining. • Four pediatric patients passed away within a two-week period in February 2022. 2. Shortages in Cardiovascular Drugs: • Essential outpatient cardiovascular drugs (e.g., antihypertensive, antiplatelet, antiarrhythmic) are scarce. • Increased incidence of decompensated heart failure, myocardial infarction, and unstable arrhythmias. 3.Imported Drugs and Economic Crisis: • Lebanon heavily relies on imported drugs or raw materials for local pharmaceutical production. • Economic crisis, shortage of foreign currency, local currency devaluation, and lifting subsidies impact importation and fabrication processes. 4. Drug Availability Challenges: • High cost of medication leads to lack of drug availability. • Regular supply shortages at the MoPH and the National Social Security Fund (NSSF). • Customs officials and transport delays contribute to patients being unmediated for months, especially for newer unpatented drugs.

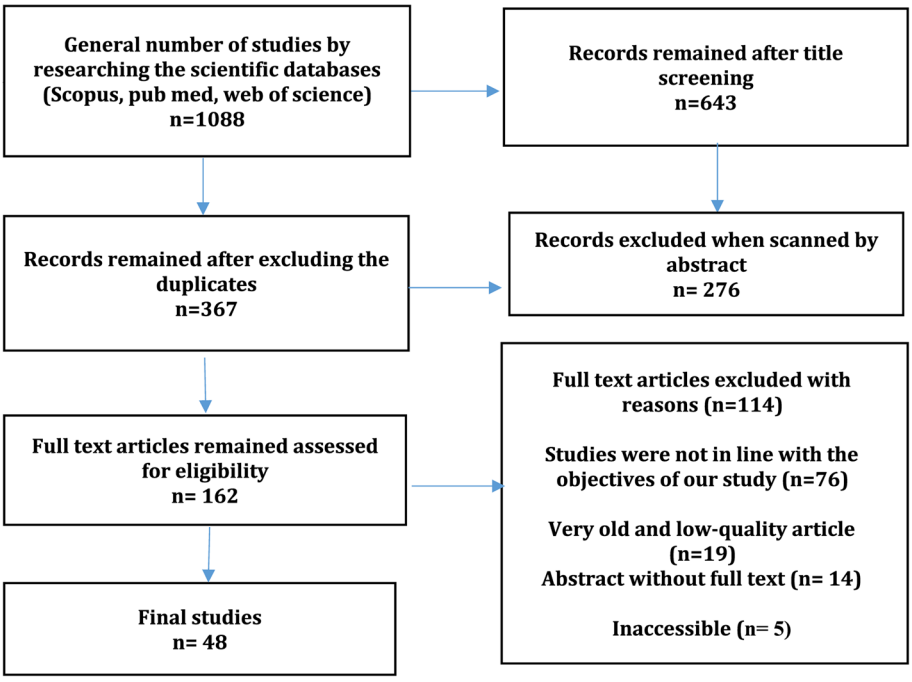

Fig. 1 PRISMA follow diagram of the process of study selection for scoping review

domains, we aim to inform evidence-based improvements and promote a more resilient and equitable HS for the Lebanese population.

Primary healthcare

Despite the challenges, Lebanon's primary healthcare (PHC) system has shown remarkable resilience, with patient satisfaction levels reaching new heights. The quality of services has led to increased customer satisfaction and a surge in patient visits to PHC centers across various regions and social strata [25, 29]. Even during the crisis, healthcare provision remained robust, with both public and private PHC centers and hospitals continuing to operate. Accreditation in PHC played a crucial role in improving healthcare delivery and quality. The government's support for a national network of PHC centers, offering cost-effective consultations, free chronic medications, and vaccines, has been instrumental in maintaining service delivery for both refugees and citizens [29, 30].

However, significant challenges persist within Lebanon's PHC system. The MoPH allocates a mere 5% of its budget to preventive PHC services, highlighting a critical underfunding issue [31]. This limited funding is particularly concerning given the overwhelming burden of refugees on the PHC network. Syrian refugees and other non-Lebanese nationalities now constitute a larger proportion of primary care beneficiaries than the Lebanese population itself, placing immense strain on available resources. As a result, overcrowding and long waiting times have discouraged Lebanese citizens from seeking PHC services, leading to a significant drop in engagement [25, 31, 32].

Funding shortages exacerbate these issues, particularly in health human resources. A shortage of family medicine physicians exists across PHC centers, and over 20% of surveyed centers lack registered nurses, compromising the quality of care and placing additional strain on existing personnel [6, 33]. The absence of robust incident and accident reporting systems and care provision summaries hinders effective monitoring and improvement of service delivery [33].

The limitations of PHC services extend beyond staffing. Not all centers offer essential services like medical imaging and blood tests, forcing patients to bear these costs out of pocket, which is particularly burdensome for those with limited financial means. The urban-rural healthcare access gap remains pronounced, with rural areas lacking necessary services and facilities, restricting access to vital healthcare services for vulnerable populations [34].

Moreover, the scarcity of comprehensive prevention programs, particularly those focused on lifestyle counseling and health promotion, limits the effectiveness of primary prevention efforts [34, 35]. This shortfall is evident in the struggle to address non-communicable diseases (NCDs), which require sustained preventive measures and accessible healthcare services to manage effectively. Limited accessibility of PHC services further hampers primary prevention efforts, leaving significant portions of the population at risk [35].

Despite these challenges, Lebanon's PHC system presents several promising avenues for improvement. Amid the crisis, the Lebanese HS maintained financing levels across primary, secondary, and tertiary care [28, 36, 37]. This achievement was facilitated by sustained contracts with PHC centers, ensuring continuity of care for all patients, including refugees. Deliberate efforts have been made to optimize PHC services, prioritizing accessibility and affordability [10].

The system demonstrated efficient utilization of financial resources during the crisis, with strategic investments in PHC services proving effective. Patients, including Lebanese citizens and refugees, reported positive experiences with PHC services, which were often more accessible and affordable than other healthcare options [7, 37]. This positive feedback underscores the potential of Lebanon's PHC system to deliver quality care if further investments are made to enhance service delivery [37].

Lebanon's adherence to a therapeutic drug policy ensures the importation of essential medications, making them accessible to the population [6, 38]. With continued strategic investment and alignment of resources, the PHC system could significantly improve health outcomes across the country, benefiting both Lebanese and non-Lebanese residents [38].

However, despite PHC's efficiency in service delivery, several threats loom over the system. Limited funding hinders PHC's ability to recruit specialized staff and acquire necessary equipment for implementing accreditation standards [10, 18, 39]. High staff turnover, excessive workloads, and the absence of a robust referral system pose significant challenges in meeting PHC accreditation criteria [10]. The influx of refugees strains the PHC network, and the government grapples with the added pressure [8, 10].

In summary, Lebanon's HS has made significant strides through the establishment of an extensive network of well-equipped centers and advancement of specialized services. However, the principal threats to the performance and integrity of this HS are related to PHC accreditation challenges, high staff turnover, heavy workloads, and lack of a structured referral system. The added pressure of refugees on primary healthcare delivery and poorly developed mental health services exacerbate these issues [8, 40–44]. Severe financial stress is also evident in secondary care, where public hospitals face a 30% shortfall in essential supplies and increased costs due to economic influences [12, 44, 45]. Regulatory burdens and worker shortages, particularly among nurses.

Secondary healthcare

The public and private hospitals in Lebanon have continued to operate throughout the crisis, which is quite an achievement given the myriad of challenges that still exist in maintaining healthcare provision at all levels [39, 46]. In fact, according to a report by the Lebanese MoPH, more than 90% of all hospitals have continued to function throughout the economic crisis and the COVID-19 pandemic [8]. Nevertheless, local hospitals are really improving their response plans and capacities, especially those that are more at risk, like Beirut and Tripoli. For example, the MoPH has reported that hospitals in these areas have improved their emergency response capacities and increased their capacity to respond to infectious disease outbreaks by 25% since 2020 [27, 35, 46].

There is reportedly wide availability of essential equipment for safe maternal and newborn healthcare services in both public and private sectors. A Lebanese Order of Physicians survey conducted in 2023 reported that essential equipment needed for maternal and neonatal healthcare, like advanced neonatal ICU and maternal monitoring systems, is available in about 85% of hospitals across Lebanon [8]. This kind of availability from then onwards resulted in very few maternal deaths, reducing MMR from 50 per 100,000 live births in the year 2015 to 35 per 100,000 live births by 2023 [5, 19, 44]. This kind of outcome reflects the high quality of care at the time of birth, backed by well-trained medical personnel and improved health infrastructure [5].

However, a visibly high degree of privatization in Lebanon's healthcare has created realities with serious prohibitive effects on access to affordable and quality health care for both the refugee and local populations. The private-ness of the institutions means that accessing healthcare will cost most patients, especially those who are not covered under the NSSF, Civil Servants' Cooperative, or Military Health Funds. On the other hand, the majority of Lebanese citizens without these coverages have reported great difficulties in affording necessary treatments due to high out-of-pocket costs. For example, by 2023, as more than 70% of the Lebanese [27, 30].

Bed shortages most acutely impact the provision of surgical services, where a profound quantity of elective surgeries has been canceled because of the limited number of beds contracted to by the government [7]. As of this sort of factor, a recent 2023 survey by the Lebanese Hospitals Association, it has been estimated that upwards of 40% of scheduled surgeries within public hospitals have been neither postponed nor outright canceled because of the low number of contracted beds that the government has agreed to support [7].

Moreover, mental health services are grossly underresourced, particularly in the public sector. There is a general shortage of psychiatrists, with an availability of 3.5 per 100,000 as opposed to the 5 per 100,000 recommended by the WHO [40, 47]. This shortfall in mental health professionals results in significant barriers to accessing necessary services for those affected. The

MoPH is seeking to enhance its strategies for mental health care provision, but the progress remains slow due to financial constraints and a lack of available resources [30, 42].

Tertiary healthcare

Much like the US model, public secondary and tertiary health care institutions in Lebanon, which operate semi-independently from the state, display a nature of high technology, high costs, and profit motives [47]. This structure significantly impacts the accessibility and quality of care provided at different levels. It can only be expected that in Lebanon, the secondary and tertiary care systems, with the kind of advanced medical technologies in use and high operational costs, would be more oriented toward profit [29, 47]. The incorporation of expensive equipment and procedures of standards in developed countries blocks access by imposing barriers of affordability. For instance, the high prices of advanced diagnostic tools and treatment procedures restrict the availability of these services to those who can afford them, thereby widening the disparity in terms of quality healthcare accessibility [29].

The care for the elderly is poorly institutionalized and mainly provided by NGOs, which offer medical care, home-based nursing, psychosocial support, and the like [44]. However, the above-described organizations have resisted sustainability and integration challenges, demonstrating deficiencies in the integrated and cost-effective model of care. In 2023, some 15 NGOs work in the field of the elderly, but their effectiveness is limited due to minimal resources and the absence of an integrated policy of support [10, 44]. High costs of private insurance structure difficult and rather limited access for those over 70 years of age. Quite often, these people suffer from denials of coverage. Economic constraints also affect the sphere of dental care. The uninsured visit dentists only half as often because they cannot afford treatment. In 2023, 40% of the uninsured forwent necessary dental care because of financial reasons [4, 32].

Yet, some areas of tertiary care hold resilience and dedication: The Children's Cancer Center of Lebanon Foundation treats more than 300 children with cancer per year, even if they have no money [41]. It is an expensive cancer to treat. Yet, in sectors where the situation is dire, the sector continues to be challenged to address its shortages [35, 41]. For instance, there is a severe shortage of pediatric heart surgeons and cardiovascular drugs [33]. Since 2021, the availability of these drugs has dropped by 60%, and there are only 5 pediatric cardiac surgeons left in Lebanon [29, 33]. Added to this is the fact that Lebanon imports its medications [29]. The sealing of subsidies on pharmaceuticals translates into reduced drug availability, especially with the out-of-stock situation for essential drugs [34, 44]. The MoPH and the National Social Security Fund (NSSF) note a 50% decline in the stocks of available drugs [17]. Worse still, this dire situation is combined with elements of corruption in the distribution process and transport delays [5].

In summary, the face of tertiary care in Lebanon—that of high technology and high cost—is very much akin to the American model [47]. It avails high-quality treatment to those who can access and afford it through advanced medical technologies in the country [47].

Discussion

Our research findings indicate that despite Lebanon's tumultuous recent past, marked by the COVID-19 pandemic, economic instability, and political turmoil, its HS has demonstrated remarkable resilience in maintaining service delivery. This resilience is most evident in the PHC sector, which has seen increasing customer satisfaction and a surge in patient visits to PHC centers across various regions and social classes [2, 28]. The PHC system has been instrumental in keeping services afloat, underscoring its importance in Lebanon's healthcare landscape.

Another crucial factor contributing to the PHC system's effectiveness is its extensive financial support from NGOs and national bodies. The MoPH allocates only approximately 5% of its budget to preventive PHC services, making these extra budgetary sources essential for sustaining the availability and quality of primary healthcare services [5]. These efforts are critical in controlling the spread of communicable diseases and maintaining health improvements, including morbidity and mortality rates, with minimal inputs from the formal HS [9, 17].

However, the sustainability of these external financial resources remains uncertain, and concerns about the long-term viability of the PHC system persist. The MoPH must increase its health expenditure dedicated to primary healthcare to ensure continued provision of essential health services [5].

Inadequate financial resources currently hinder the effective recruitment of specialized staff and the provision of essential equipment necessary for all PHC centers. This directly affects the quality of care and the capacities of PHC centers to function effectively [29, 30]. The MoPH must invest in primary healthcare to build capacity in healthcare delivery and ensure access to quality, sustainable care for all Lebanese citizens [5, 11].

Lebanon's hospitals provide high-quality services in the secondary healthcare sector, with trained and competent healthcare staff meeting patients' requirements. However, a wide gap in hospital care remains due to the mass migration of specialized professionals abroad. This has resulted in a critical shortage of staff, particularly nurses, with a nurse-to-patient ratio of 1:20 in public hospitals, far below the recommended standard of 1:6 [5, 21, 23].

The influx of refugees has added to the strain on resources, causing overcrowding and increasing demand for services. Healthcare costs have surged by over 50% since 2019, driven by inflation and the devaluation of the Lebanese pound. Regulatory burdens and worker shortages, particularly among nurses, further compound the situation [21, 23].

The absence of explicit institutional policies within healthcare organizations necessitating ongoing training and education for providers in quality improvement and patient safety exacerbates the situation [11]. Secondary care institutions, including hospitals, must develop strategies to offer incentives to healthcare providers, ensuring their commitment and support for the organization. Addressing the lack of national standardized quality indicators to monitor healthcare delivery progress is also crucial, as it directly affects the quality of care provided [11, 23].

The structural challenges in Lebanon's healthcare system, including the dominance of privatized healthcare, contribute to inefficiencies, raise costs, and create accessibility barriers for vulnerable populations [9]. The government must address these disparities between rural and urban healthcare services to ensure equal access to recommended health services [11, 23].

Tertiary healthcare services in Lebanon maintain a commendable standard of quality, but the exorbitant costs associated with these services and their limited accessibility within urban areas remain significant concerns. The government must strategically establish specialty care units within central hospitals located outside the capital to address these issues [26, 29].

The MoPH has demonstrated insufficient attention to delivering healthcare services for adults, particularly in the realm of mental health services. The absence of MoPH-owned centers and minimal support for external groups providing such services is notable [26, 29].

The strong dependency on imported drugs represents a significant problem in Lebanon, especially during the current crisis. The volume of pharmaceutical imports in 2023 stands at over 80% of the country's pharmaceutical needs, making the healthcare system vulnerable to global market and economic fluctuations [31, 33].

The persistent stock-out of essential medications in both MoPH and NSSF has severe consequences for patients, particularly those with chronic conditions. The situation has caused a 25% increase in hospitalization cases due to heart attacks directly related to drug shortages [34].

The ongoing drug shortage crisis has exposed the weaknesses of Lebanon's HS. A system that has shown resilience in other areas now buckles under the pressure of pharmaceutical demands from its citizens. The government must intervene to negotiate with international suppliers, reestablish subsidies on life-saving drugs, and promote domestic manufacturing to reduce reliance on imports [31, 33].

On the other hand, the Cuban model of healthcare—operating with a GDP per capita of only $8,822—has achieved not only UHC but also health indicators truly impressive among nations [33]. This phenomenon can mainly be attributed to the country's emphasis on PHC and preventive medicine, ensuring that health remains within reach for all its citizens despite any threatened or limited resources. There is much to be learned from Cuba's model by Lebanon, especially in the areas of strengthening primary healthcare and distributing resources equitably [48]. The comparisons, however, when integrated with the health sector challenges in Lebanon, set up the issues in a broader framework while underpinning prospective strategies and models that help guide policy development. An analysis of how various systems responded to similar issues yields many lessons for Lebanon, especially as regards healthcare equity, accessibility, and sustainability.

This review offers substantial insight into Lebanon's HS, but several limitations must be acknowledged. First and foremost, the scope of this review is limited by the nature of accessible data, specifically that which relates to grey literature; it is not held to the same standards of critical review as peer-reviewed sources, potentially inserting bias or overlooking some of the information analyzed. Furthermore, it may be that literature already in existence overlooked very new developments or emerging trends that were not documented at the time of writing the review. Lastly, nuances set within the Lebanese HS—rooted in the socio-political context—mean that some subtleties cannot be entirely captured within the review.

The identified limitations suggest that, despite their value, the inferences drawn from this review have to be made cautiously. There is a need for policymakers and other stakeholders to consider these views with the associated deficiencies and biases of data in mind when they use such findings for strategic planning or reform efforts. Further research attempts should be aimed at overcoming these limitations by incorporating more comprehensive and updated data and exploring newer areas of concern in the HS.

Conclusion

The current analysis has several strengths, particularly in respect to the rigorous methodological review of scientific peer-reviewed literature and grey literature. This deepened understanding of the Lebanese HS opened its successes but also a sequence of ongoing challenges. Notable successes included the effective management of essential maternal and newborn care and the availability of specialized services despite systemic constraints. However, there are inbuilt problems with funding gaps,

workforce shortages, and the influence of economic and political crises on healthcare delivery.

Historically, the HS in Lebanon has changed drastically from the end of the civil war to an increasingly privatized structure characterized by high-tech and high-cost services, often driven by foreign financial interests [17, 42]. Incorporation of advanced technologies has made treatments very uneven, brought many access problems, and caused a lot of improvement in care [12]. Ideally, these guiding principles of a health care system—equity, accessibility, quality care—are relatively clear, other than high-cost models driven by profit-driven care.

These challenges can only be overcome by carrying out cost-effectiveness studies and using strategic purchasing strategies in the HS. Increased productivity at the human resource level can be achieved by a well-structured and effective referral system, a family physician model, close monitoring of quality, and continuous quality improvement strategies at each step [49].

One important methodological limitation is the highlighting but, on the other hand, fleshing out a base from which further research and improvements in Lebanese health service delivery can take off. Further studies are needed to validate such findings and probe other directions of reform that do take into consideration specific historical and contextual factors that were influencing the healthcare landscape of Lebanon.

Although the Lebanese HS has registered tremendous strides in its development, the economic and political crises are significant drivers in this upward trend. Policy making with evidence-based interventions and strategic planning—anchored in basic values of equities and accessibility—shall be critical in creating a more resilient and fair HS.

Supplementary Information

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Supplementary Material 1.

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Declarations

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Consent for publication
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