EDITORIAL

# Libyan healthcare system during the armed conflict: Challenges and restoration

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## African relevance

- Outlines the obstacles that an African healthcare system, particularly in Northern Africa, faces during a conflict period.

- Outlines major strategies that an Africa healthcare system could implement.

- Strategies herein can improve the quality of an African healthcare system.

## Background

Armed conflicts have serious direct and indirect negative impacts on the affected nations. The direct effects of armed conflicts are seen in deaths, injuries, harm to people, and destruction of properties and infrastructures. The indirect effects result from, among others, reduced access to food, hygiene, health services, and clean water, and from the lifting of the thin veil of civilisation [1]. Furthermore, armed conflicts cause population displacement, breakdown of health and social services, and heightened risk of disease transmission [2].

Having gone through the 2011 war, Libya is still suffering its consequences. The conflict has been complicated and its consequences aggravated by internal fighting and fragmented regional instability. In addition to the killing, injury and population displacement, new challenges to Libyan society have arisen, such as human trafficking and economic crises combined with high rates of unemployment and corruption. Libya should now be in the process of reshaping itself in a positive way by facing the heavy challenges in all aspects of life, and those multiple challenges should be faced by all sectors. The Libyan healthcare system in particular has to deal with great challenges under unusual circumstances. In 2010, Libya's human development index was ranked the highest in Africa and outperformed both Brazil and Saudi Arabia as shown in Fig. 1. There was "free healthcare [and] free public education," but after the former socialist regime was toppled with the help of NATO air forces, the country has remained in a spiral of violence [3,4].

Herein, we highlight the major obstacles that the Libyan healthcare system is facing and outline the strategies needed to overcome the challenges.

## Burden of the conflict

Despite the lack of accurate epidemiological estimates of the burdens of the Libyan armed conflict, a few studies have shown that great damage has been inflicted on Libyan society, mirrored in the large numbers of deaths and injuries and in population displacements [5,6]. A recent report on health in times of uncertainty in the Eastern Mediterranean region over the last decade has shown that Egypt, Libya, Syria and Yemen had a steady increase in life expectancy of about 0.25 years per year between 1990 and 2010. However, Egypt, Tunisia and Yemen have lost about 0.25 years of life expectancy after the uprisings that began in 2010. When comparing the observed life expectancy to the expected life expectancy if no crises had occurred, we found a large decrease in life expectancy in Libya of more than nine years for males and six years for females [7]. A surveillance study conducted between February 2011 and February 2012 showed that 21,490 (0.5%) persons were killed, 19,700 (0.47%) were injured, and 435,000 (10.3%) have been displaced. The calculated national mortality rate was 5.1 per 1000 per year (95% CI 4.1–7.4), but the rate varied significantly by region. This rate increased further as the armed conflicts escalated in 2014.

Figs. 2 and 3 show the distribution of direct deaths, injuries and population displacements during the Libyan conflict in 2011 by age and sex. Both soldiers and civilians died as a direct consequence of the conflict. However, the highest mortality was among men aged 15–59 years, indicating that almost all the fighters were men. Injuries and population displacements are two major concomitant complications of the Libyan armed conflict with which the country's health service has to struggle with during the coming years.

War-associated injuries impose a heavy burden on a healthcare system. Hospital capacities become overloaded and the urgency of injured combatants and civilian casualties may displace "regular" patients. Furthermore, there is an urgent need for huge amounts of essential supplies (e.g. consumables, blood, blood products and pharmaceuticals), which are already in shortage. On top of all this, clinical workers suffer additional heavy emotional stress from working under unsafe conditions to deal with difficult battle-associated injuries. These problems pile additional burdens on health management and hospital environments [8]. In the long run, many if not most of these injuries will end up as permanent handicaps requiring special services that the healthcare system has to provide. As the Libyan healthcare information system has broken down, there is great uncertainty about the magnitude of mortality and disability.
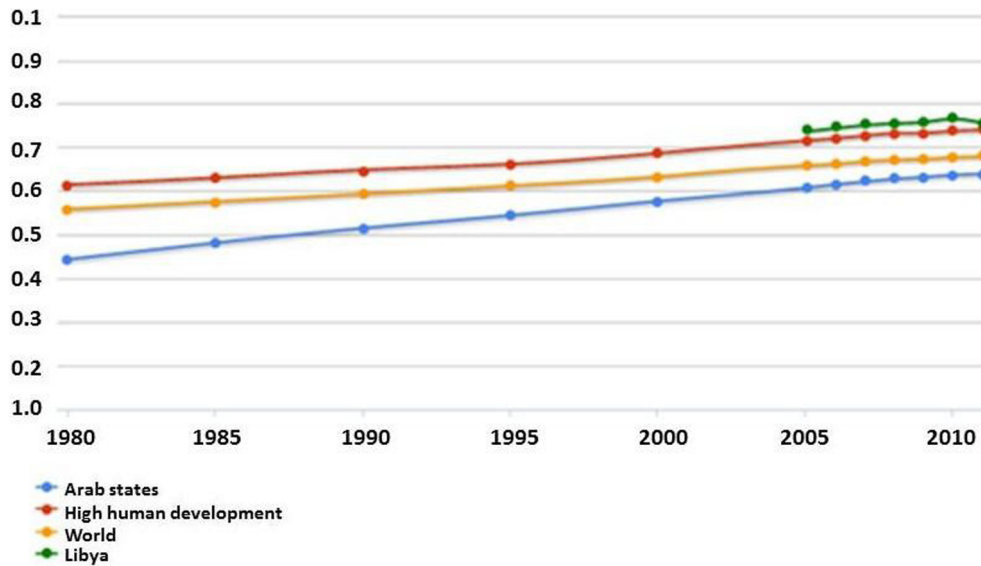
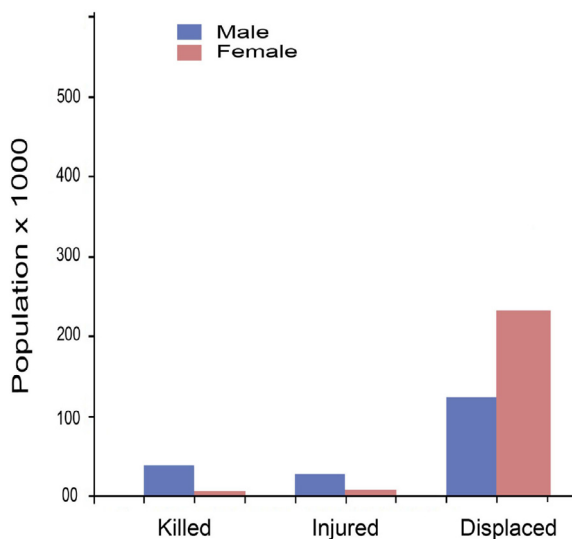**Fig. 1.** Libyan human development index: trends 2005–2010.



**Fig. 2.** Estimated gender distribution of deaths, injuries and displacements during the Libyan armed conflict.

Massive population displacements during the Libyan conflict generated large numbers of internal refugees scattered in camps in the safer cities. This is expected to increase poverty, at least in the short term. Most of the displaced citizens have lost their jobs and income and have had to leave behind their assets and savings. Studies carried out on selected displaced communities in Iraq, Somalia and Southern Sudan indicate that microbial diseases and malnutrition have become endemic, usually due to inadequate water supplies and food delivery logistics [9]. The ongoing Libyan armed conflicts have added a disproportionate burden of morbidity and mortality from infectious diseases. A sudden surge in cases of tuberculosis, diarrhoeal diseases and parasitic infections have frequently been reported at healthcare facilities [10]. The incidences of mental health syndromes such as stress, anxiety and posttraumatic stress have also increased [11].

Transportation, communication and patient information systems within the Libyan healthcare system have been badly disrupted, particularly in primary and emergency services. There has also been direct damage to the buildings and infrastructures. This damage could diminish the ability to accurately measure the effects on the populations affected by the armed conflict, which leads to great uncertainty about the magnitude of mortality and disability [12]. The challenges to the Libyan healthcare system are evident and their nature and magnitude dictate the need for reassessment of the whole system. To deal with the heavy burdens, the Libyan healthcare system has to be re-configured; both immediate and long-term strategies are needed.

### Planning and future prospects

The future of the Libyan healthcare system depends on the country's ability to manage, remedy and resolve the consequences of the conflict. The system can be rebuilt with relative ease if the wealth of the country is put in good hands guided by appropriate strategies [13,14]. Immediate interventions based on clear planning policies and followed up by periodic evaluations are urgent needs.

Fig. 4 illustrates the requirements and the stages through which the Libyan healthcare system should pass in order to provide a healthy life for the Libyan population. Post-conflict assessment and rehabilitation can be divided into three phases. The first is an emergency phase that is associated with an initial response to the conflict period and aimed at immediate health needs. The second is a transitional phase that is associated with the post-conflict period and aimed at coordination and restoration needs. A final development phase consists of upgrading and long-term planning. These three phases should be totally integrated and must not be segregated from each other. The achievement of these goals is heavily dependent on the country's security status, both internal and external. Libya's strategic location and its wealth put it at risk of interference by various local and international forces, and all remedial efforts should be driven by national goodwill, held together by the strong social ties of Libyan society, and guided by a firm, new, modern, independent political leadership.