

# Public-Private Partnerships are an Effective Way to Address and Manage Malnutrition in Syria: A Case Study from Al-Hol Camp

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## ABSTRACT

**Background:** This study aims to describe malnutrition among children under five in Al-Hol camp-Syria, and to showcase a successful partnership between WHO and the health care private sector to combat acute malnutrition during the current conflict in Syria.

**Methods:** A retrospective record review was carried out on children admitted with severe acute malnutrition with complications in SAM children at Al-Hikmah private hospital in Al-Hassakeh Governorate in the duration of 12 months. A WHO and public sector partnership was established between WHO and Al-Hikmah private hospital. Through this partnership, WHO has trained the hospital staff on management of malnutrition in children through multiple training workshops. WHO also provided the necessary therapeutic kits needed for managing acute malnutrition in IDPs in Al-Hol camp.

**Results:** A total of 729 children with CSAM were admitted and managed in Al-Hikmah Stabilization Centre (SC) comprised of 381 males (52.2%), and 348 females (47.7%). Mean weight at admission was 5125 grams. At the time of discharge it was 5615 grams, with a mean gain of 469 grams. The mean gain weight per Kg per day was 10.6 grams. A total of 5171 hospitalization days with a mean of 9 days per case. Fifty-two percent of cases stayed 7 days which is in line with WHO guidelines. Forty-eight percent of children remained in the hospital for more than 7 days due to complications that required longer stay. The total cost of the program which was covered mainly by WHO.

**Conclusion:** The overall mean death rate was 3.6%. Treatment outcomes were in an acceptable level of SPHERE standard, national management protocol and most reports in the literature. The partnership program between WHO and the private healthcare sector achieved excellent results in managing cases of acute child malnutrition admitted to the hospital in terms of lowering mortality rates and increasing weight gain with acceptable duration and cost rates of hospitalization.

**Keywords:** WHO; Al-hol camp; Stabilization centre; Malnutrition

## INTRODUCTION

The Conflict in the Syrian Arab Republic that started in 2011 led to displacing about 4.8 million people as refugees to neighboring countries, including Turkey, Lebanon, Jordan, Iraq, and Egypt by the end of 2016. Half of these refugees were children under the age of 18 years [1]. Following this large influx, humanitarian agencies and the governments of host countries had difficulty meeting the growing needs of the

refugees, including health services. In Iraq, Jordan, and Turkey, many Syrian refugees rented or lived in makeshift dwellings, with only a small proportion staying in refugee camps. Additionally, there were no official refugee camps in Lebanon, Greece, and Egypt [2]. Recent studies in Lebanon and Jordan have indicated that most Syrian refugees faced some food insecurity, with larger families being more vulnerable which can lead in one way or another to some forms of malnutrition among children.

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About 52 million children suffer from wasting, 45% of deaths among children under five are attributed to under nutrition in addition to major contributions to mental development, increased risk of disease in adulthood and quality of life [3]. It is universally acknowledged that good nutrition is the foundation for every child's growth and development. Without a healthy diet and adequate quantities of food the consequences manifest in micronutrient deficiencies, obesity, chronic malnutrition and acute malnutrition. Stunting can badly impact physical and cognitive growth. Children under five who suffer both stunting and wasting are more likely to die as their immune systems are severely weakened and are less resistant to common childhood diseases. It is this devastating impact of malnutrition that has become one of the Syrian conflict's most harmful realities. The level of severity makes it difficult for bodies to recover and increase the vulnerability and chances of complication. Malnutrition could be moderate or severe [4].

Early detection of malnutrition is key for proper management and recovery. Community programs such as the Community-Based Management of Acute Malnutrition (CMAM) or integrated management of acute malnutrition, have provided a solid platform to set up early detection, referral, and management at community, outpatient, and inpatient levels. Human capacity is built at the community level to screen children who are 6–59 months of age using mid-upper arm circumference or weight and height, in addition to bilateral pitting edema. Based on measurements and malnutrition definitions, infants and children are identified as normal, moderately, or severely malnourished and are accordingly immediately referred for a full assessment at a respective treatment center for the management of moderate or severe acute malnutrition. Severe cases are referred and admitted to Stabilization Centers (SC) at hospitals for treatment [5].

Severe Acute Malnutrition (SAM) is one of the most serious forms of hunger and if left untreated, particularly in young children, can lead to severe and far reaching consequences. After a decade of conflict in Syria, this stays as a serious concern among vulnerable populations. Children with severe acute malnutrition can be transferred to outpatient care when their medical complications, including edema, are improving, they have good appetite, and are clinically well and alert. The health care system in Syria has been heavily disrupted; as a result of the crisis and attacks the health centers were left damaged and in some cases non-functional, significantly reducing the availability of essential health services to affected populations [6]. By the end of 2019, 68% out of 1,811 public health centers assessed, were only reported to be functioning (46% fully and 22% partially) and, 76% out of 11 public hospitals, were reported to be functioning (52% fully and 24% partially). Thirty-one per cent of health centers were reported damaged (7% fully and 24% partially), as well as 45% of hospitals (11% fully and 34% partially). Public-private partnerships are seen as an effective way to capitalize on the relative strengths of the public and private sectors to address double burden of malnutrition, which could be tackled adequately in respect of diseases that particularly affect developing countries [7].

The public-private partnerships operate in multiple forms, with leadership that usually falls to governments, public health agencies, or nongovernmental organizations, the private sector takes a secondary role. This review presents an example consistent with the private-public engagement approach. In this case, a public-private partnership was established between WHO and a private sector hospital to manage child malnutrition in Al-Hol camp-Syria during challenging times in which more than 45% of public hospitals were gone out of service due to ongoing conflict in the country.

## WHO action and programs in combatting malnutrition

The Infant and Young Child Feeding program (IYCF), jointly developed by WHO and UNICEF, aims to create an environment that will enable mothers, families and other caregivers to make informed choices about optimal feeding practices for infants and young children. The IYCF emphasizes the importance of breastfeeding as the preventive intervention with potentially the single largest impact on reducing malnutrition among children. In 2018, 592 health care workers were trained on IYCF. WHO estimates that they will go on to provide counseling to approximately 62,000 people per year [8]. Adequate supplies of clean water are essential to maintain health and reduce the risk of epidemics, especially in overcrowded settings such as IDP camps. Water is essential for cooking, drinking and cleaning. If people do not have adequate supplies of clean water, they will obtain it from sources that are likely to be contaminated. In the first six months of 2018, WHO assessed the quality of water in Aleppo, Homs, north-west and north-east Syria and Rural Damascus. A total of 1865 ground wells, 521 reservoirs and over 190 jerry cans were tested. WHO worked with national authorities and partners to disinfect polluted water and make it safe to use. The key to preventing diseases from unclean water is to ensure that water is of a high quality when consumed, not just after treatment or at water distribution points. The Baby-Friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991. The BFHI is a global effort to implement practices that protect, promote and support breastfeeding. In 2018, WHO and UNICEF issued new guidance on promoting breastfeeding in maternity hospitals and other health care facilities. In emergencies, the implementation of the IYCF is critical to ensure child survival and development. In 2018, staff in 38 hospitals in Syria were trained on the BFHI.

## WHO partnerships and collaboration to preserve health and combat diseases and malnutrition

The United Nations has encouraged governments, health jurisdictions, and civil society to engage with the private sector through Public-Private Partnerships (PPPs) to address malnutrition. The more successful and sustained nutrition initiatives have been those that brought together government agencies, nongovernmental organizations, policymakers, schools, civil society, the food industry, and the media. International agencies have repeatedly called for increased engagement with the private sector to address malnutrition in low- and middle-

income countries. WHO-Syria collaborated with national authorities, WASH sector partners and local communities. The WHO procured chlorine tablets for distribution to households and chlorinated approximately 20, 000 cubic meters of water in 22, 000 water tankers that were used to supply villages and IDP camps in north-east Syria. One cubic meter of water is enough to cover the needs of one family per day [9].

WHO's nutrition programme, launched in 2014, has continued to expand and develop to reach the most needed beneficiaries and secure the basic nutritional needs. A total of 755 PHC centers and 48 private clinics in 13 governorates, 24 of them offer nutritional surveillance services for children under five years of age. Those who were severely malnourished were referred for specialized treatment in outpatient therapeutic centers supported by UNICEF and WFP. A total of 906 malnourished children with medical complications were referred in 2018, compared with 1023 children in 2017. This decrease in cases can be partly attributed to better screening and preventive measures such as the IYCF Programme and the BFHI. All nutritional surveillance and stabilization centers are now reporting through the national nutritional surveillance system. WHO delivered equipment and supplies, including new and improved therapeutic treatments to support 33 stabilization centers across the country [10].

In coordination with health partners at the camp, WHO conducted four on-job training sessions for the new staff of different health partners who provide health care services at the camp. These training sessions included different health topics such as the integrated management of childhood illnesses and the referral mechanism of children from Al-Hol camp to WHO-supported hospitals. During the reporting period, 8 new children with severe acute malnutrition were referred to the WHO contracted Al-Hikmah private hospital in Al-Hassakeh governorate to join the other eight children already hospitalized and under treatment. Thirteen children have been cured and referred to outpatient care at the camp while three other children were still under treatment. Another 7 children with severe acute malnutrition and 11 children with moderate acute malnutrition were detected by health partners and referred to the outpatient center in the camp to receive the proper treatment. WHO delivered a medical shipment to health partners at the camp. WHO conducted field visits to the WHO-contracted Al-Hikmah and Al-Hayat private hospitals which are specialized in the referral mechanism of patients from the camp to assess the provision of secondary health care and trauma services [11].

## MATERIALS AND METHODS

A retrospective record review was carried out on children admitted with severe acute malnutrition with complications in SAM children at Al-Hikmah private hospital in Al-Hassakeh Governorate in the duration of 12 months. Data analysis of all patients admitted to Al-Hikmah private hospital in Al Hassakeh governorate was consolidated and analyzed. All discharge reports were collected and entered into a unified final template, and an excel sheet was used for data entry and data analysis.

## Inclusion criteria

all Severe acute malnutrition cases with very low weight for height with medical complications, severe edema, or poor appetite or present with one or more integrated Management of Childhood Illness (IMCI) danger signs, including Vomiting, repeated seizures or one seizure more than 15 minutes, and unconsciousness. It was divided into 2 phases. In the initial phase, the goals were to treat and/or prevent hypoglycemia, hypothermia, and dehydration, initiate feeding and administration of oligoelements and vitamins, and treat infections and other complications such as severe anemia or heart failure. In cases of slight or moderate dehydration, oral rehydration solution for children with severe malnutrition or the standard WHO oral rehydration salts solution were given. All of the children were given antibiotics following the WHO guidelines; however, specific antibiotic therapy was administered depending on the diagnosis, severity, and clinical course of the infection. Children older than 2 years of age were treated with parasite control according to the protocol. All WHO guidelines were followed in the management of all CSAM cases. The rehabilitation phase started when the children's appetites improved and infections were controlled.

## RESULTS

For the duration of January till the end of 2019, a total of 729 children with CSAM were admitted and managed in Al Hikmah Stabilization Centre (private sector) comprised of 381 males (52.2%), and 348 females (47.7%). The higher number of males admissions was noted in March 2019 (40% of all admissions), and 79% of all admissions are noted in the first 4 months, and a noted decreasing of the admissions started in May 2019 due to the decrease of the displacement wave. Mean weight at admission was 5125 grams. At the time of discharge it was 5615 grams; with a mean gain of 469 grams. The mean gain weight per Kg per day was 10.6 grams, which is considered a very good gain weight according to WHO guidelines.

## Hospitalization duration

A total of 5171 hospitalization days with a mean of 9 days per case. Fifty-two percent of cases stayed 7 days which is in line with WHO guidelines. Forty-eight percent of children remained in the hospital for more than 7 days due to complications that required longer stay. It is worth noting that the total cost of the program was \$136000 USD (227 USD per patient) which was covered mainly by WHO.

## Death rates

Twenty four deaths cases were recorded (3.6%). Mortality rate was under WHO cut-off point (5%). Gender, males 10 (45.4%), females 12 (54.6%). Minimum age of death was 3 months old, maximum age of death was 49 months. The mean age of death was 12 months old. Mean Hospitalization duration of death cases 7 days, 86% of death cases were noted under 24 months old. The higher number of deaths were noted in March, compatible with the higher number of admissions. The higher death rate was noted in April (5.2%).

## Reported complications

Of the 729 cases, 7 children were discharged before finalizing their treatment on parental request and responsibility. Twenty-one children were admitted with complications; like edema, Pneumonia (193), urinary infection (63), tuberculosis (3) and sepsis (8), the remainder of the admissions did not have complications but due to security restriction, all severe cases were managed at the hospital. Complications that led to death were pneumonia (9) tuberculosis (2), sepsis (9), cold (1) electrolyte imbalance (2).

## DISCUSSION

Emergencies, both natural and man-made continue to impact and increase global prevalence of severe acute malnutrition. Acute malnutrition increases, especially in the first few weeks of an emergency, as demonstrated in a Kurdish refugee study from Iraq. The developed community-based management of acute malnutrition has been administered in most areas with a developed emergency response, providing a cost-effective modality to detect, refer and manage cases of SAM during emergencies while meeting the minimum recognized SPHERE quality standards. From the 597 cases admitted and managed, the mortality rate was 3.6%. The rates are below the threshold of 5% in WHO's guidelines and comparative to two similar studies conducted in southern Ethiopia and Felegehiwot hospital, Ethiopia reporting 3.6% and 2.76%, respectively. Additionally, the mortality rates, were significantly lower than the minimum SPHERE standard and national management protocol for severe acute malnutrition managed at stabilization centers. In comparison to a study conducted in Hama, Syria, the rates were significantly lower than the reported 10.2% of mortality rate in Hama Hospital. Furthermore, the mortality rate was lower compared to studies conducted in Mekelle hospital, Ethiopia (12.8%), Sekota hospital, Ethiopia (28.67%) and Zewditu hospital, Ethiopia (21.3%). The disparity could be explained due to varied human resource capacities, availability of supplies, patient caseload and clinical status.

Adjusting for other variables, children less than 24 months of age were 1.9 times more likely to die earlier than children aged 24 months and above. This was in agreement with other reports. The average length of stay in the SCs in this study was 7 day which is under 10 days as per WHO guidelines. Edema was found in 3.5% of all admissions, this was significantly lower than what was reported in a study conducted on 98 children in Hama, which reported 10.1% of cases admitted with edema. The average weight gain of 10.6 g/kg/day was also in agreement with the minimum international standard set for management of severe acute malnutrition which set an average weight gain of 8 g/kg/day. This was far higher than the numbers reported in a study conducted in South Africa (2 g/kg/day), perhaps because of the differences in length of the stay in the hospital or the differences in the study setting. However, it was lower when compared to the study in Hama, Syria; where the average weight gain was reported as 17.75 g/kg/day. This could be due to better hospital conditions, human resources or caseload.

## CONCLUSION

The high number of admissions is considered to be the highest number admitted in all SCs in Syria since the beginning of the program in 2013. This is due to the enormous waves of displacement. It is worth mentioning that the greatest number of cases were under 24 months due to the severe food insecurity, dire humanitarian conditions and weak infant and young Child Feeding practices before arrival at the camp. The overall mean death rate was 3.6%. Treatment outcomes were in an acceptable level of SPHERE standard, national management protocol and most reports in the literature. Despite the severe circumstances, overwhelming caseload, and minimum resources, the program achieved excellent results in managing cases admitted to Al Hikmah hospital in the field of low mortality rate and high gain weight with acceptable duration and cost rates of hospitalization. Establishing public-private sector partnerships is a new framework that need to be cultivated and further developed in low and medium income countries. These new private-public engagement initiatives need to be managed in ways suggested for public-private partnerships by the WHO, especially if the private sector is in the lead. Once the rationale for engagement is defined, there is a need to mobilize resources, establish in-country partnerships and codes of conduct, and provide a plan for monitoring, evaluation, and accountability. Public-Private Partnerships (PPP) in the health sector is an effective way to mitigate malnutrition in low and middle-income countries.

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