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The Lasting Impact of War-Related Burn Scars on Children in the Middle East - Why Plastic Surgery Should Not Be Considered Elective in Conflict Zones

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Introduction

Background and Significance

- Conflict in Gaza, Syria, Yemen, Iraq, and Afghanistan has left thousands of children with severe burn injuries from airstrikes, bombings, and unsafe camp conditions [1].
- Burns cause disfigurement, functional disability, and lifelong psychological trauma [2]
- In Gaza, children make up 70% of severe burn admissions, with many requiring multiple surgeries [3]
- Burn care demands extensive resources, yet ongoing infrastructure damage, supply shortages, and a shortage of skilled specialists intensify the crisis.
- Reconstructive surgery is further limited by its classification as elective rather than essential [1].

Objective

- To examine the physical, psychological, and social effects of war-related burn scars in children across the Middle East.
- To identify gaps in reconstructive and mental health care in conflict zones.

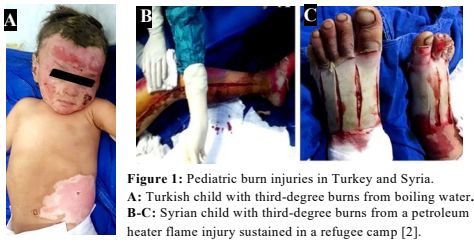

Figure 1: Pediatric burn injuries in Turkey and Syria. **A:** Turkish child with third-degree burns from boiling water. **B-C:** Syrian child with third-degree burns from a petroleum heater flame injury sustained in a refugee camp [2].

Results

1. Types of Burden

Physical Burden

- **Children <5 = 30–40% of burn surgeries** in conflict zones (Gaza, Syria) [4,5].
- **Complications:** contractures (stiffness/deformity), **growth restriction**, **facial disfigurement** (eyelid closure/feeding issues) [6].
- **Large burns common: 20–40% TBSA** → long-term functional loss [7].
- **Delayed surgery** → worse mobility and rehab outcomes.

Social and Psychological Burdens

- **Gaza (war-exposed children): 54% PTSD**, **41% depression**, **34% anxiety** [8,9].
- **Visible scars** → bullying, school withdrawal, **low self-esteem**.
- **Quote:** "**When I look in the mirror, I don't see myself. I see what the war did to me.**"
- **Limited mental-health services** compound trauma and impair daily functioning [8,9].

2. Gaps in Medical Care

Surgical Shortages

- **Gaza:** only **1–2 certified plastic surgeons** serve >2 million people [6,11].
- **MSF Amman (regional burn center):** capacity ~**100 patients** at a time; **400+ waitlist**; most pediatric patients require **≥3 surgeries** [12].
- **Untreated needs:** scar contracture and functional loss often persist **for years**.

Access Barriers

- **<50%** of Gaza's war-injured children needing evacuation received permits in **2024** [13].
- Many children go **years without follow-up surgery**, leading to **permanent disability** [12].
- **Barriers:** destroyed health infrastructure; limited anesthesia, fuel, and equipment; **security restrictions at borders**.

Mental Health Underserved

- **Before 2023, >1 million children in Gaza needed psychological support [8].**
- **Few trauma-trained child psychologists** remain in active war zones.
- **Most burn survivors receive no structured counseling or therapy** [9,10].
- **Long-term psychosocial care is largely absent** in most conflict areas.

3. Re-emphasis of Reconstructive plastic surgery

- Reconstructive plastic surgery:
  - **Restores function** (e.g., hands, mouth, neck mobility)
  - **Prevents disability** (e.g., walking, feeding, writing)
  - **Improves psychological outcomes** (e.g., body image, confidence) [3,7,12].
- Labeling burn care as "elective" **delays treatment**, leaves scars untreated, and reinforces stigma [11,12].
- Burn reconstructive surgery must be **classified alongside trauma and orthopedic care** in humanitarian response.
- **Call to action:**
  - Invest in **mobile burn teams**, **local surgical training**, and **rehab + counseling programs**.
  - Create **regional surgical hubs** and **fast-track evacuation systems** to improve access.

Table 1: Demographic, clinical, and hospitalization characteristics of pediatric patients with war-related burns [2].

Demographics	Turkish (n= 469)	Syrian (n=238)	P value
Age/years	4.39±3.78	5.62±4.03	**0.001**
Weight/kg	18.91±12.72	22.84±14.64	**0.001**
Body surface area (BSA)/m²	0.72±0.33	0.82±0.36	**0.001**
Total body surface area (TBSA)/%	0.13±0.11	0.24±0.21	**0.001**
Burnt surface area (BuSA)/m²	0.1±0.11	0.22±0.24	**0.001**
Total hospitalization period/days	9.51±9.62	18.66±17.17	**0.001**
Clinical hospitalization period/days	5.78±5.54	6.55±7.5	0.316
ICU hospitalization period/days	3.69±8.26	12.51±16.21	**0.001**
Time delay from burn to admission/days	0.35±1.27	0.98±4.47	0.295

Methods

Literature Search

- A structured literature review was conducted following PRISMA guidelines using PubMed, EMBASE, and regional health databases (2011–2024), targeting studies on war-related pediatric burns in the Middle East.
- Keywords included "Middle Eastern War Conflict", "Pediatric Burn scars", "Plastic surgery" and "Psychological/social impact."

Data Collection

- **Inclusion Criteria**: Studies involving children under 18 years with war-related burn injuries in the Middle East that reported physical, psychological, or social outcomes and included data on reconstructive or follow-up care.
- **Study types**: Included peer-revied journal articles, retrospective hospital studies, and humanitarian organization reports to ensure academic and field-based perspectives.

Conclusion

Implications and Impact

- **Reframing Reconstructive Surgery**: Emphasize plastic and burn reconstruction as **essential, not elective**, in conflict zones to improve function, mobility, and psychosocial recovery.
- **Advancing Health Equity**: Address the disproportionate burden on children in war zones by integrating reconstructive care into trauma and emergency health systems.

Recommendations and Further Research

- **Expand research**: More data are needed on **long-term outcomes** of war-related pediatric burn scars, especially in under-documented conflict areas.
- **Overcome limitations**: Conflict-related insecurity and lack of infrastructure restrict data collection; collaborative humanitarian research could fill critical gaps.

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