



# NEUROMOTOR DEVELOPMENTAL DELAY AMONG HOSPITALISED YEMENI CHILDREN IN THE CONTEXT OF MALNUTRITION: PILOT PROJECT IMPLEMENTATING SPECIALISED PHYSIOTHERAPY SERVICES

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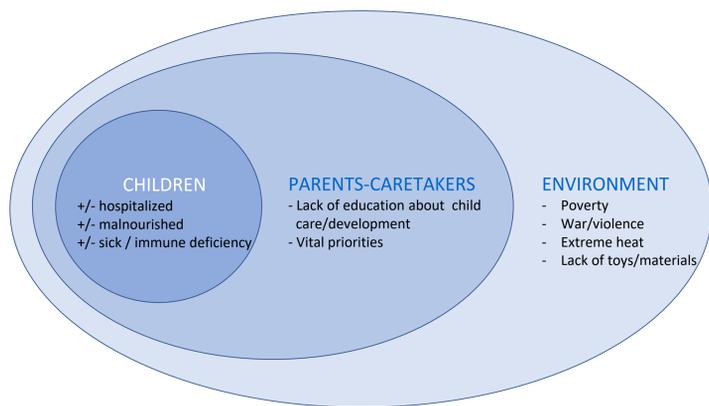
## BACKGROUND AND OBJECTIVES

Malnutrition among young children can lead to developmental delays (DD) (Figure 1) manageable by comprehensive care.

The MSF Foundation and MSF physiotherapy team aimed to:

- (i) determine the prevalence of motor DD among Haydan inpatient pediatric population (encompassing ITFC and pediatric IPD)
- (ii) implement early neuromotor rehabilitation (NMR) activity [1] in a challenging humanitarian setting

Figure 1 : Risk factors for pediatric developmental delay (DD) in humanitarian contexts



## METHODS

### Screening

- 4 week screening period in November 2023
- Every new non-walking patient <3 years of age was screened by physiotherapists
- Surveyed parents or caretakers about neuromotor status before hospitalization using **developmental red flag table** (Table 1)

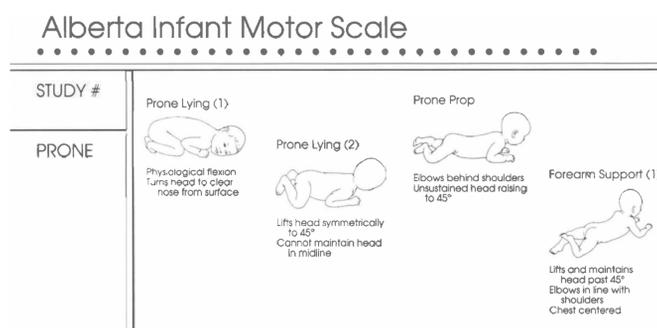
### Assessment

- **Alberta Infant Motor Scale (AIMS)** (Figure 2) was performed for those who did not successfully pass screening.

DEVELOPMENTAL RED FLAGS	
3 months	
Head control	
Contact hand-mouth	
Procline pushing on elbows	
6 months	
rolling supine to procline	
grab foot	
seated with hands support	
8 months	
Pivots or crawling	
10 months	
sit by him/herself	
12 months	
stand with hands support	
15 months	
walk laterally with support	
18 months	
walk by him/herself	

Table 1 – Developmental Red Flags

Figure 2 : Extract of AIMS booklet record



### Implementation

- The project physiotherapy team was trained to assess and perform early rehabilitation for DD cases (Pictures A and B)
- Nurses, doctors and health promoters were sensitized about motor steps and involved in the global approach supporting child development

## PRELIMINARY RESULTS

### Screening of new IPD/ITFC patients

- 196 admissions
- 73 (37%) failed initial gross assessment excluding existing neurological/congenital condition

### Assessments

- 26 Alberta Infant Motor Score (AIMS) assessments completed
- 23/26 (88%) scored below the 5th percentile of infant motor function (Figure 3)
- 14/16 (88%) patients with nutritional records suffered from Severe Acute Malnutrition

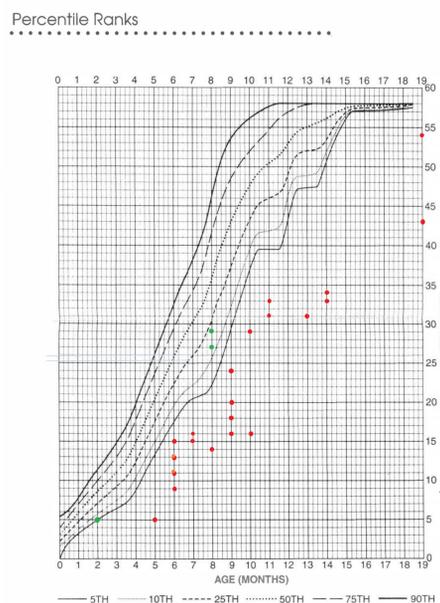


Figure 3: Amalgamated data from 26 infants who completed AIMS  
In red : 23 patients below 5th percentile rank  
In green : 3 patients above 5th percentile rank

### Physiotherapy Activity (2023 Nov. 6 -2024 Feb. 18)

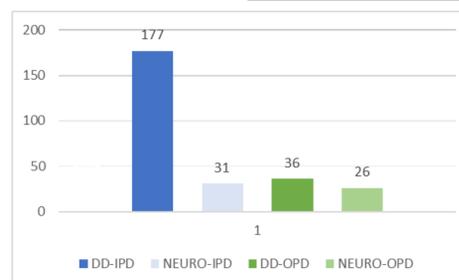


Figure 4 : New pediatric patients referred to physiotherapy (excluding orthopedics and chest therapy)

Referral reasons :  
DD = Developmental delay  
NEURO = neurological/congenital disease

### Implementation

- Ongoing activities:
- Strengthening physio team skills with experience
  - Training doctors and nurses to detect early neuromotor disorders
  - Create a child-adapted space for physiotherapy sessions
  - Follow-up of activity volume (Figure 4, 5)

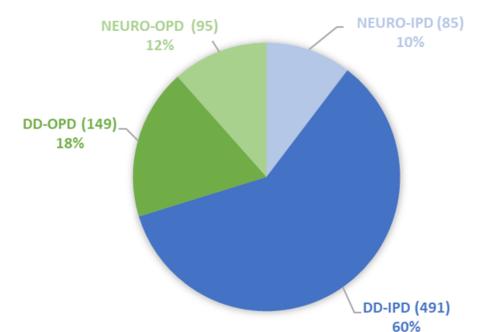
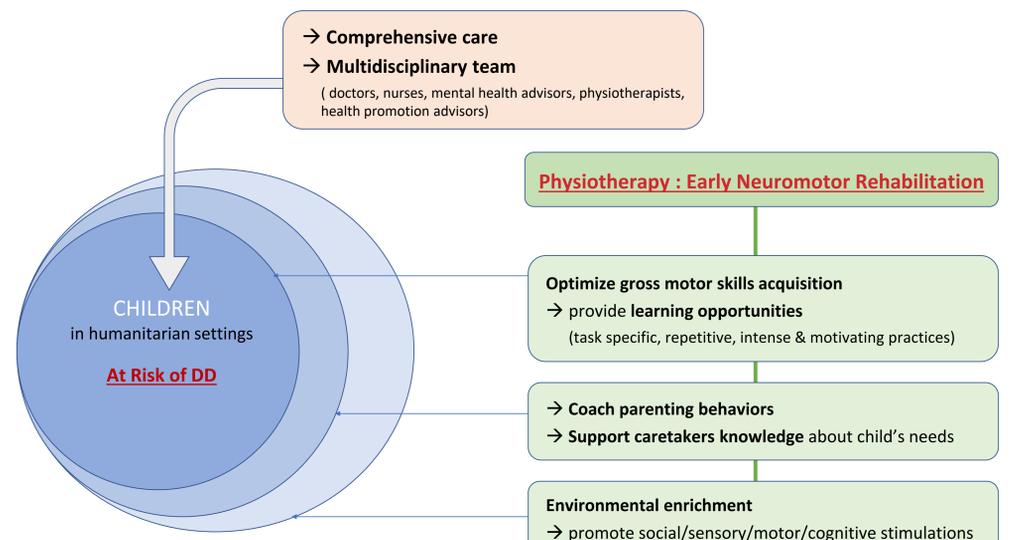


Figure 5 : Distribution of sessions among departments and NEURO/DD diagnoses



Pictures A and B : Physiotherapist doing a neuromotor session  
A- Working on lateral weight-transfer on a sitting position  
B- Working on rolling from supine to prone

### Figure 6 : Child Development Care : Focus On Physiotherapy Intervention



## DISCUSSION

- Screening indicates considerable risk of DD among hospitalized children in Haydan
- Implementing NMR shows encouraging results with patients completing motor skills that were unreachable during the initial assessment
- Malnourished children may benefit from including pediatric physiotherapy as part of their comprehensive care program (Figure 6)
- Systematic AIMS re-assessments needed to monitor any progress after physiotherapy treatment and medical staff training
- Systematic standard assessment is still under implementation and limited by difficult access to patients during/after hospitalization
- The staff experience and knowledge gained from this pilot project will help improve data collection

## ETHICS STATEMENT

This research fulfilled the exemption criteria set by the Médecins Sans Frontières Ethics Review Board for a posteriori analyses of routinely-collected clinical data and thus did not require MSF ERB review. It was conducted with permission from the OCP Medical Director.