



# Nutrition Surveillance Reports

## HEALTH ASSESSMENT PROGRAMME

ISSUE No. 2, January–December 2011

Undernutrition among refugee children aged 6–59 months is a critical public health concern due to the subsequent increased morbidity and mortality in this age group and the food insecurity facing refugee populations worldwide.<sup>1, 2</sup> As part of the refugee health assessments at key locations around the world, IOM Migration Health Division teams routinely conduct anthropometric measurements for all persons examined. Using this data, IOM provides regular Nutrition Surveillance Reports that are disseminated to key partner agencies including the United Nations High Commissioner for Refugees (UNHCR) and other non-governmental organizations (NGOs). These reports will contribute to refugee health monitoring and aid in the planning of essential nutrition interventions for refugee children.

### Child growth and nutrition indicators

This report presents the prevalence of two key indicators for protein–energy malnutrition as recommended by the World Health Organization (WHO),<sup>3</sup> UNHCR<sup>4, 5</sup> and the World Food Programme (WFP),<sup>6</sup> namely weight-for-height or wasting and height-for-age or stunting. Wasting is generally indicative of recent and severe weight loss, often associated with acute starvation and/or recent disease. Wasting is considered the best indicator of acute malnutrition and a strong predictor of mortality among children under five years of age. Stunting is generally indicative of a more chronic process that results from suboptimal nutrition and/or health conditions.

### Data collection and analysis

The IOM data management software called Migrant Management and Operational Systems Application (MiMOSA) is used in refugee health assessments to capture and analyse operational data. MiMOSA data are gathered and undergo quality control in a central data repository used for generating statistical reports. This report uses 2011 MiMOSA data on country of origin, age, gender, height (or length) and weight for refugee children aged 6–59 months from IOM sites in seven countries, namely, Ethiopia, Iraq, Jordan, Kenya, Malaysia, Nepal and Thailand. As recommended for population-based assessments, the z-score system of expressing indicators as the number of standard deviations or z-scores above or below reference mean was used. Summary statistics on the z-scores were computed using SQL 2005 functions STDEV and AVG for the standard deviation and mean z-scores, respectively.

The new WHO Child Growth Standards were applied to estimate wasting and stunting.<sup>3</sup> The severity or public health importance of malnutrition among refugees aged 6–59 months examined in various countries – overall and at specific sites – was assessed using prevalence ranges recommended by WHO.<sup>7\*</sup> Prevalence of wasting in previous years is presented to show observed changes at each site.



Height measurement of a child refugee as part of the IOM routine health assessment and resettlement activities in Damak, Nepal.  
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### Summary of findings

A total of 7,101 refugee children (11% of a total of 62,095 refugees examined) were included in this report. Overall, this sample showed medium prevalence of wasting (7.5%; 6.9–8.1) and low prevalence of stunting (19.7%; 18.8–20.6). The prevalence levels of wasting were high among refugee children in Ethiopia (11.9%) and Malaysia (12.0%), and medium in Iraq (6.2%), Kenya (8.3%) and Nepal (7.5%). Jordan (2.6%) and Thailand (4.9%) showed relatively low levels of wasting or acute malnutrition in refugee children. The prevalence levels of stunting were high in Thailand (39.8%); medium in Ethiopia (25.0%) and Kenya (21.0%); and low in Iraq (13.1%), Jordan (3.4%), Malaysia (7.9%) and Nepal (17.1%).

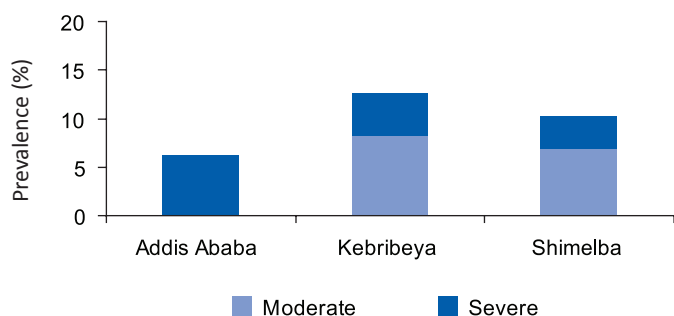
\* The classification criteria and recommended actions are based on the old NCHS reference. See ref. 4.

## Nutrition status data on refugees aged 6–59 months assisted by IOM in Addis Ababa and refugee camps in Kebribeya and Shimelba from January to December 2011

### Demographic characteristics

There were a total of 469 children aged 6–59 months (10% of all 4,686 refugees) with a mean age of 33 months across the three sites. There was similar distribution of male and female children in all sites (sex ratio of 1.0–1.1). Children at Kebribeya and Addis Ababa were from Somalia, while those at Shimelba were from Eritrea.

**Figure 1: Prevalence of wasting among refugees aged 6–59 months (n=469), Ethiopia, 2011**

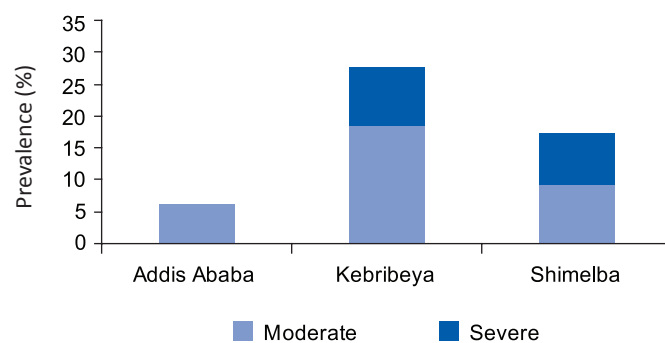


Prevalence of wasting in previous years is shown in Figure 3. In Addis Ababa, prevalence of wasting decreased from 2010 to 2011.

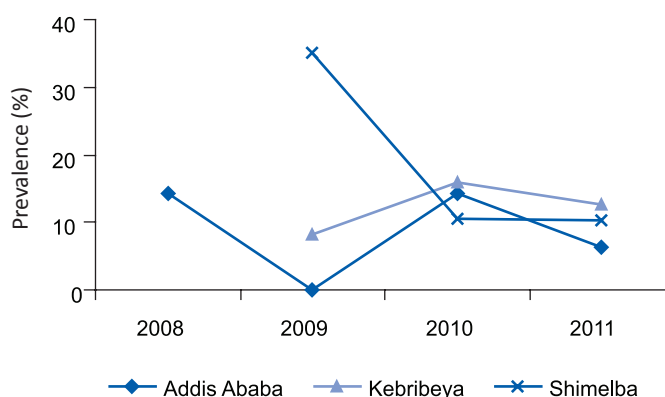
### Findings

For all refugee children aged 6–59 months examined in Ethiopia, the prevalence of wasting was high (11.9%; 9.0–14.9) and stunting was medium (25.0%; 21.0–28.9). Wasting was high in Kebribeya (12.6%; 9.2–16.0) and Shimelba (10.3%; 3.9–16.7), while medium in severity in Addis Ababa (6.3%; 0.0–18.1). There was medium prevalence of stunting in Kebribeya (27.6%; 23.0–32.2), and low in Shimelba (17.2%; 9.3–25.2) and Addis Ababa (6.3%; 0.0–18.1).

**Figure 2: Prevalence of stunting among refugees aged 6–59 months (n=469), Ethiopia, 2011**



**Figure 3: Trends in prevalence of wasting, Ethiopia, 2008–2011**

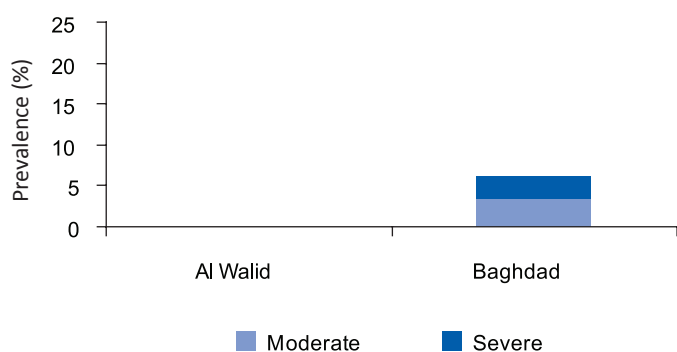


## Nutrition status data on refugees aged 6–59 months assisted by IOM in Al Walid camp and Baghdad from January to December 2011

### Demographic characteristics

There were a total of 1,170 children aged 6–59 months (13% of all 8,847 refugees) with a mean age of 32 months across the two sites. The sex ratio of the examined children was 0.8 in Al Walid camp and 1.1 in Baghdad. The refugee children in Baghdad were from Iraq and those at Al Walid camp were from the Occupied Palestinian Territory.

**Figure 4: Prevalence of wasting among refugees aged 6–59 months (n=1,170), Iraq, 2011**

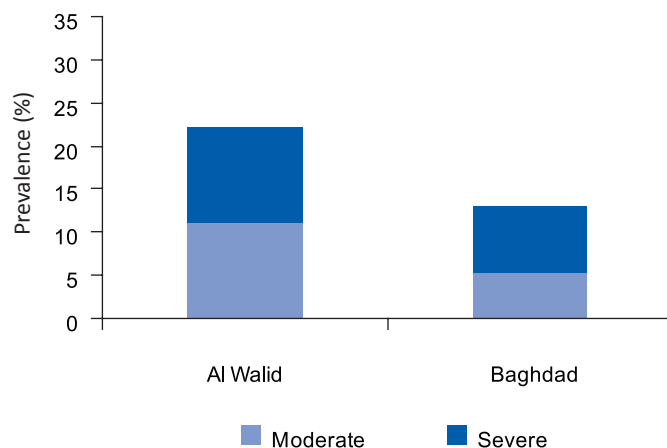


Nutrition data for refugee children over the past three years are shown for Baghdad. A decline in the prevalence of wasting is observed in Baghdad from 2009.

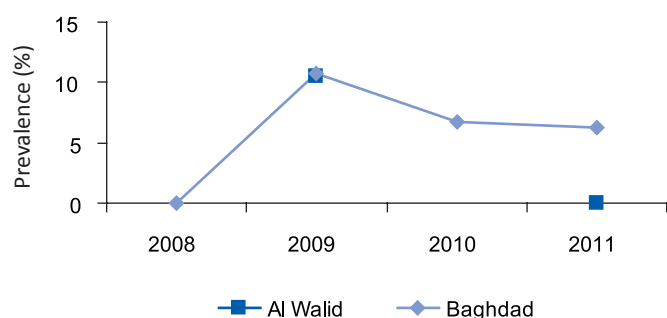
### Findings

Among all refugees aged 6–59 months examined at the two sites in Iraq, the prevalence of wasting was medium (6.2%; 4.9–7.6) and that of stunting was low (13.1%; 11.1–15.0). No wasting was observed in Al Walid camp in this period. The severity of wasting among refugees aged 6–59 months was medium in Baghdad (6.3%; 4.9–7.7). The severity of stunting was low in Baghdad (13.0%; 11.1–14.9) and medium in Al Walid camp (22.2%; 0.0–49.4).

**Figure 5: Prevalence of stunting among refugees aged 6–59 months (n=1,170), Iraq, 2011**



**Figure 6: Trends in prevalence of wasting, Iraq, 2008–2011**

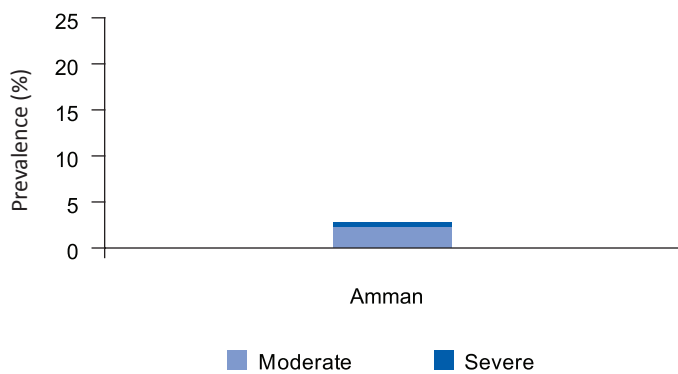


## Nutrition status data on refugees aged 6–59 months assisted by IOM in Amman from January to December 2011

### Demographic characteristics

There were a total of 529 children aged 6–59 months (9% of all 5,840 refugees) with a mean age of 33 months and a sex ratio of 1.0. The majority of the children examined in Amman were from Iraq (98%), with a small number (2%) from Sudan.

**Figure 7: Prevalence of wasting among refugees aged 6–59 months (n=529), Jordan, 2011**

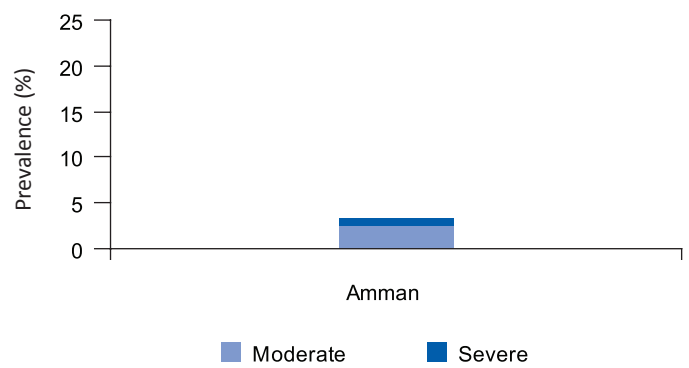


A decline in prevalence of wasting among refugees aged 6–59 months is observed in Amman from 2010 to 2011.

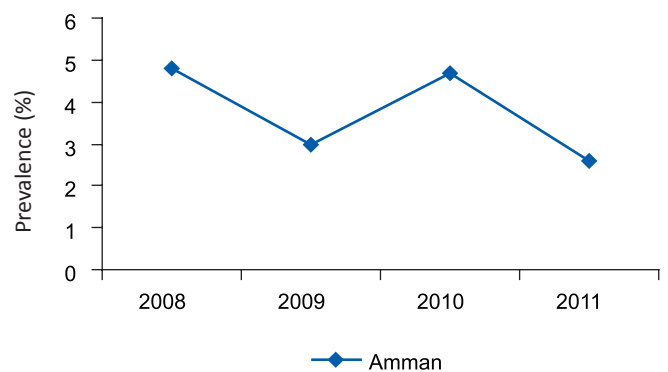
### Findings

Overall, among refugees aged 6–59 months, the severity of wasting (2.6%; 1.3–4.0) and stunting (3.4%; 1.9–4.9) in Jordan (Amman) was low. Among the few refugees aged 6–59 months from Sudan (n=12), the severity of wasting was very high, with a prevalence of 16.7% (0–37.8).

**Figure 8: Prevalence of stunting among refugees aged 6–59 months (n=529), Jordan, 2011**



**Figure 9: Trends in prevalence of wasting, Jordan, 2008–2011**



**Nutrition status data on refugees aged 6–59 months assisted by IOM in Dadaab, Dagahaley, Hagedera, Ifo, Kakuma and Nairobi from January to December 2011**

**Demographic characteristics**

There were a total of 903 children aged 6–59 months (14% of all 6,403 refugees) with a mean age of 31 months. The sex ratio of the examined children ranged from 0.6 in Dadaab to 3.0 in Nairobi. Almost all the children assisted in Dadaab, Dagahaley, Hagedera and Ifo were of Somali origin. In Kakuma, about 65 per cent of the children were from Somalia, and the rest were from Ethiopia (11%) and Sudan (24%). In Nairobi, 54 per cent of these children were from Ethiopia, 39 per cent were from Somalia; and the rest were from the Democratic Republic of the Congo (7%).

**Figure 10: Prevalence of wasting among refugees aged 6–59 months (n=903), Kenya, 2011**

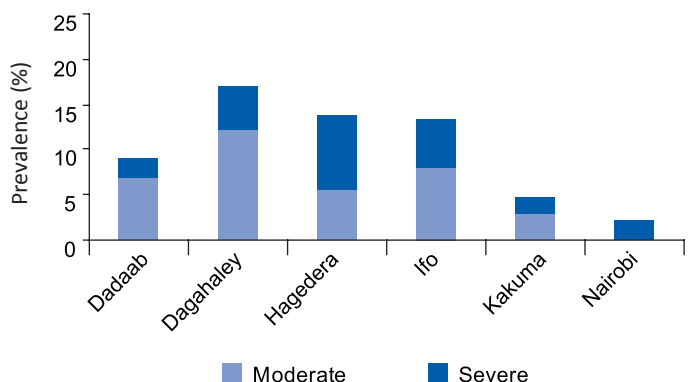
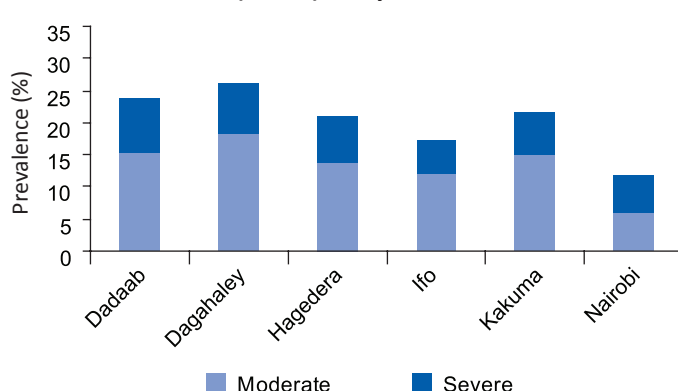


Figure 12 shows the prevalence of wasting in the last four years at all sites in Kenya, except Dadaab where the anthropometric data could be obtained only for 2011. Prevalence of wasting decreased from 2010 to 2011 in Dagahaley, Hagedera, Ifo, Kakuma and Nairobi.

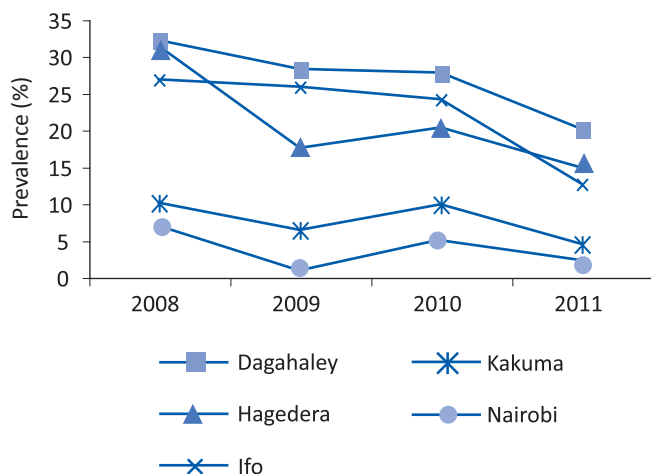
**Findings**

Overall, among refugees aged 6–59 months in Kenya, the severity of wasting (8.3%; 6.5–10.1) and stunting was medium (21.0%; 18.4–23.7). The severity of wasting among refugees aged 6–59 months in Kenya was very high in Dagahaley (16.9%; 7.8–26.0) and high in Hagedera (13.9%; 5.9–21.9) and Ifo (13.1%; 6.5–19.8). Dadaab had medium severity (9.0%; 5.7–12.3), while Kakuma and Nairobi had low severity with prevalence of 2–4.7 per cent. Dadaab, Dagahaley, Hagedera and Kakuma had medium severity of stunting, with prevalence ranging from 21 per cent to 26 per cent. The severity of stunting was low in Ifo and Nairobi (12–17%).

**Figure 11: Prevalence of stunting among refugees aged 6–59 months (n=903), Kenya, 2011**



**Figure 12: Trends in prevalence of wasting, Kenya, 2008–2011**

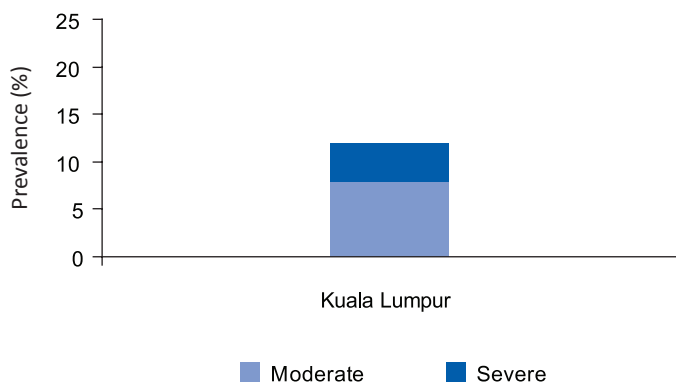


## Nutrition status data on refugees aged 6–59 months assisted by IOM in Kuala Lumpur from January to December 2011

### Demographic characteristics

There were a total of 1,166 children aged 6–59 months (13% of all 8,801 refugees) with a mean age of 25 months and a sex ratio of 0.9. All the children examined in Kuala Lumpur were from Myanmar.

**Figure 13: Prevalence of wasting among refugees aged 6–59 months (n=1,166), Malaysia, 2011**

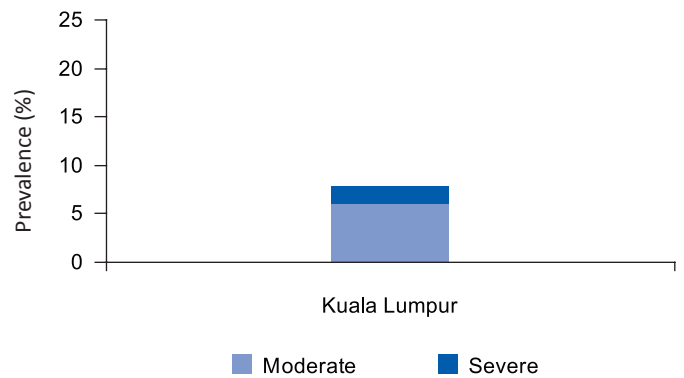


The observed annual prevalence of wasting among refugees aged 6–59 months in Kuala Lumpur showed a general increase from 2008 to 2010, then a slight decrease in 2011.

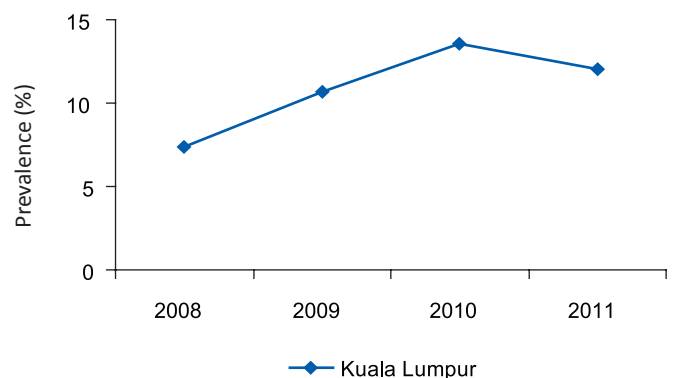
### Findings

Overall, among refugees aged 6–59 months in Malaysia, the severity of wasting (12.0%; 10.1–13.9) was high and stunting (7.9%; 6.3–9.4) was low.

**Figure 14: Prevalence of stunting among refugees aged 6–59 months (n=1,166), Malaysia, 2011**



**Figure 15: Trends in prevalence of wasting, Malaysia, 2008–2011**



## Nutrition status data on refugees aged 6–59 months assisted by IOM at Beldangi I, Beldangi II, Goldhap, Khudunabari, Sanischare and Timai\*\* from January to December 2011

### Demographic characteristics

There were a total of 1,367 children aged 6–59 months (8% of all 17,035 refugees) with a mean age of 31 months. The sex ratio of the examined children ranged from 0.9 in Beldangi II and Khudunabari to 1.8 in Goldhap. The entire sample of children examined at all sites in Nepal was from Bhutan.

**Figure 16: Prevalence of wasting among refugees aged 6–59 months (n=1,367), Nepal, 2011**

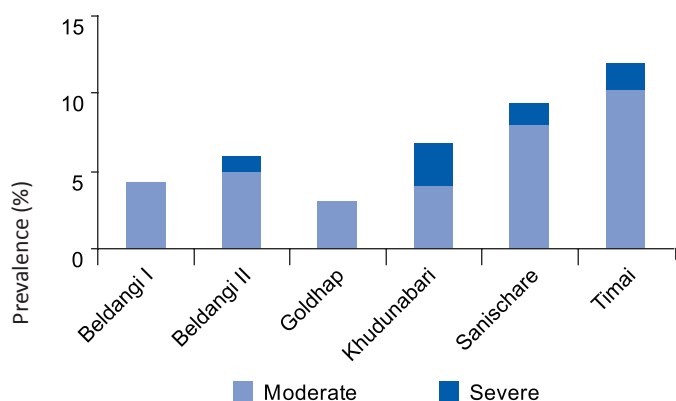
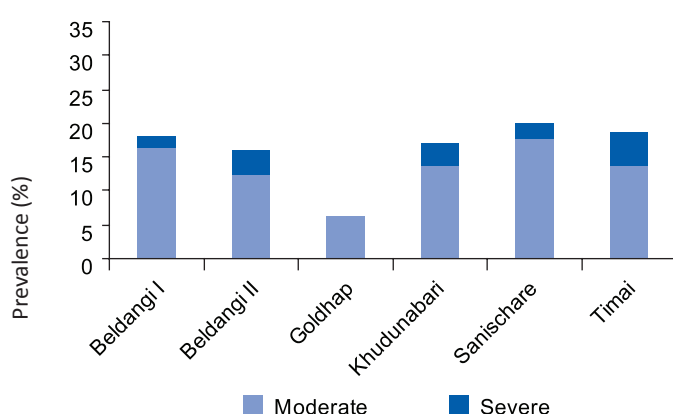


Figure 18 shows prevalence of wasting in the last four years among 6–59 month-old refugees examined in Nepal. A general decline from previous years was observed across most sites.

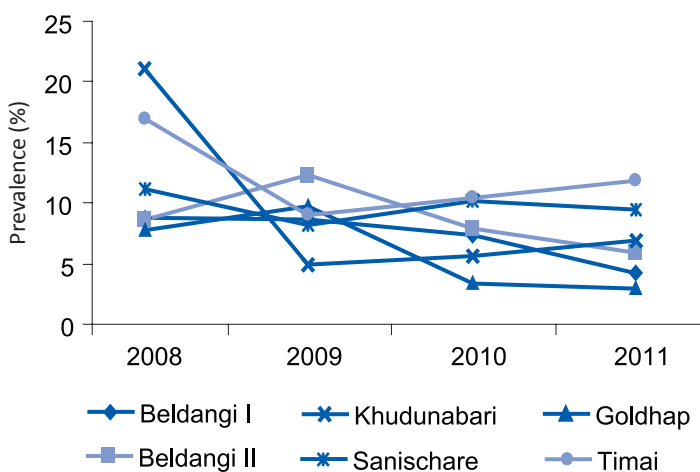
### Findings

For all refugees aged 6–59 months examined at various sites in Nepal, the prevalence of wasting was at medium severity (7.5%; 6.1–8.9) and stunting was low (17.1%; 15.1–19.1). Wasting was high in Timai (11.6%; 7.1–16.2) and ranged from medium to low in the other sites – Khudunabari (7.7%; 4.2–11.2), Sanischare (9.3%; 5.9–12.7), Beldangi I (4.3%; 1.4–7.3). Stunting prevalence was low in most sites, except Sanischare (19.9%; 15.2–24.6).

**Figure 17: Prevalence of stunting among refugees aged 6–59 months (n=1,367), Nepal, 2011**



**Figure 18: Trends in prevalence of wasting, Nepal, 2008–2011**



\*\*In Nepal, Goldhap and Timai camps are reported to have closed.

## Nutrition status data on refugees aged 6–59 months assisted by IOM in Ban Don Yang, Ban Mae Surin, Ban Mai Nai Soi, Mae La Camp, Mae La Oon, Mae Ra Ma Luang, Nupo, Tham Hin and Umpiem camps from January to December 2011

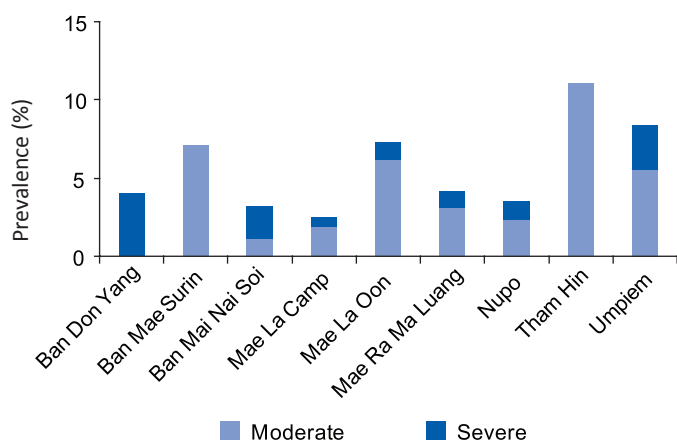
### Demographic characteristics

There were a total of 1,497 children aged 6–59 months (14% of all 10,483 refugees) with a mean age of 31 months. The sex ratio of the examined children ranged from 0.5 in Tham Hin to 1.3 in Ban Don Yang and Nupo. All the children examined at all sites in Thailand were from Myanmar.

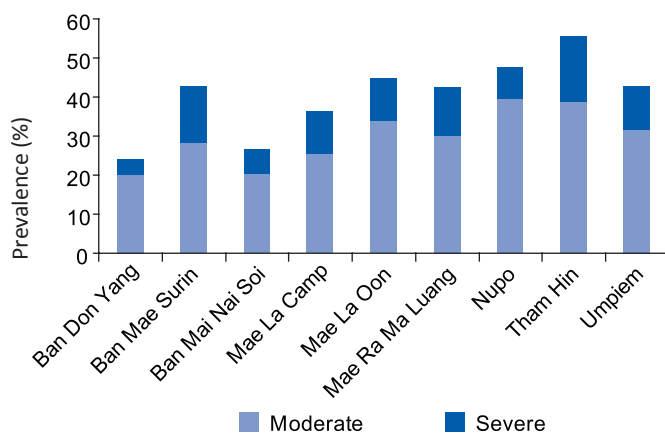
### Findings

Overall, the assessment of malnutrition among refugees aged 6–59 months in Thailand showed low severity of wasting (4.9%; 3.8–6.0) with a high level of stunting (39.8%; 37.3–42.3). The severity of wasting among refugees aged 6–59 months in Thailand was high in Tham Hin (11.1%; 0.0–25.6); medium in Ban Mae Surin, Mae La Oon and Umpiem (7.1–8.4%) and low in the rest of the camps. A very high prevalence of stunting was seen in most camps, namely, Ban Mae Surin, Mae La Oon, Mae Ra Ma Luang, Nupo, Tham Hin and Umpiem (42–56%). Stunting prevalence levels were high in Mae La Camp (37%) and medium in Ban Don Yang and Ban Mai Nai Soi (24.0–26.7%).

**Figure 19: Prevalence of wasting among refugees aged 6–59 months (n=1,497), Thailand, 2011**

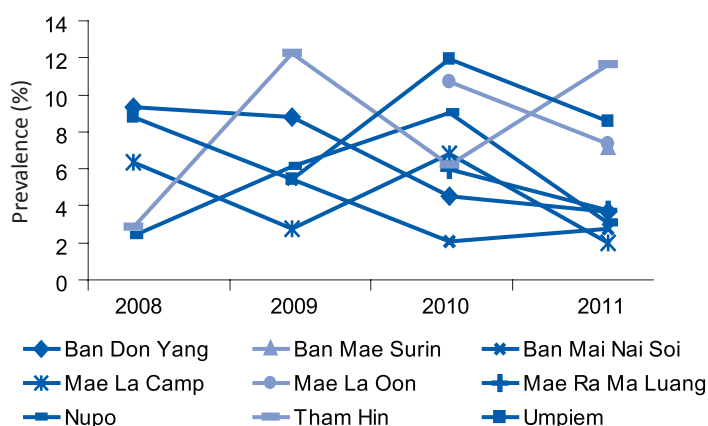


**Figure 20: Prevalence of stunting among refugees aged 6–59 months (n=1,497), Thailand, 2011**



Data on nutrition status for the past four years are available for five sites in Thailand. A general decline in wasting prevalence in 2011 as compared with previous years was observed in Ban Don Yang. From 2010 to 2011, prevalence of wasting decreased in Mae La Camp and Nupo Camp.

**Figure 21: Trends in prevalence of wasting, Thailand, 2008–2011**





## Comments on the interpretation of findings

The analysis included data from all IOM sites where 50 or more refugees aged 6–59 months were examined from January to December 2011. In addition, where anthropometric exam data were available for one or more previous years, prevalence of wasting from 2008 to 2010 was included. Since routine programme data are being used for this Nutrition Surveillance Report, prevalence estimates are subject to data quality, and any inferences regarding historical trends are subject to issues such as sample selection bias, data clustering and statistical power. Summary statistics on z-scores show that for several locations the standard deviation values of the z-scores are over the expected values – indicating limitations in anthropometric measurement and/or inaccurate age reporting. Anthropometric measurements are typically taken only once without accounting for inter-observer variations and data entry errors. In order to improve the quality of the data for this and future reports, observations with the outlier values of nutrition indicators ( $z$  score  $>|5|$ ) are being communicated on a monthly basis to IOM field programmes for verification of age, weight and height values. Age assessment is challenging in refugee settings where children and parents or guardians may not recall or be willing to report correct dates of birth. Further interpretations of acute malnutrition will require understanding of mortality, disease, seasonality and underlying causes (related to food, health interventions and social factors) in the respective refugee sites.<sup>2</sup> Finally, the resettlement populations across refugee settings in multiple sites as well as in different years in the same sites may be heterogeneous due to various factors, including country of origin, criteria for resettlement referrals and length of stay in refugee settings. This limits generalization of findings to the overall refugee children populations in each country.

## Recommendations

Ongoing nutrition surveillance, prompt referrals and further investigation at selected sites can reduce excess mortality and morbidity caused by malnutrition among refugee children. For individual referrals, IOM continues to strengthen capacity of its health assessment programmes with tools and guidance for prompt reference of moderately malnourished children to targeted supplementary feeding programmes, and those with severe acute malnutrition to therapeutic feeding programmes at the respective sites.<sup>1</sup> Based on the report findings and existing practices, the provision of targeted selective feeding programmes may be recommended for sites with high severity or serious prevalence of global acute malnutrition (wasting prevalence  $\geq 10\%$ ) namely, Kebribeya and Shimelba (in Ethiopia); Dagahaley, Hagedera and Ifo (in Kenya), Kuala Lumpur (in Malaysia) and Tham Hin camp (in Thailand).<sup>1, 7</sup> Blanket selective feeding programmes may be required at sites with aggravating factors. Sites with medium prevalence of global acute malnutrition (wasting prevalence 5–9%) will warrant close ongoing monitoring of refugee children's nutrition status, especially in the presence of aggravating factors. Additional surveys are recommended to identify and address underlying causes of malnutrition, prevalence of anemia and micronutrient deficiencies, as well as the impact of nutrition interventions.

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