

# Nutrition Surveillance Reports

## HEALTH ASSESSMENT PROGRAMME

ISSUE NO. 4, January–December 2013

Child malnutrition, both undernutrition<sup>1</sup> and overnutrition (overweight), are global problems that impact on survival, incidence of acute and chronic diseases, healthy development, and the economic productivity of individuals and societies (Black et al., 2013). Among refugee children aged 6–59 months, undernutrition 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 (Black et al., 2008; Young, 2004). 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 Office of 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 prevalence<sup>2</sup> of three key indicators for protein – energy malnutrition – namely, weight-for-height (WFH) or wasting, height-for-age (HFA) or stunting, and weight-for-age (WFA) or underweight – as recommended by the World Health Organization (WHO) (2006), UNHCR (2011), and the Centers for Disease Control and Prevention (CDC) and World Food Programme (2005).

- **Wasting** is generally indicative of recent and severe weight loss, often associated with acute starvation and/or recent disease, resulting in a thin and wasted child. Wasting is considered the best indicator of acute malnutrition and a strong predictor of mortality among children under age five.
- **Stunting** is generally indicative of a chronic malnutrition as a result of prolonged or repeated undernutrition that started before birth.
- **Underweight** is an indicator of both wasting and stunting, reflecting both chronic malnutrition and acute malnutrition.

### Data collection and analysis

As part of health assessment for the United States Refugee Admissions Programme, the IOM medical staff gathers all required health data of examined refugees and stores them to the IOM data management software called Migrant Management Operational System Application (MiMOSA). This application 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 (CDR) used for generating statistical reports.

This report uses the 2013 MiMOSA data on country and location of health assessment, nationality, age, gender, height (or length) and weight of refugee children aged 6–59 months from IOM sites in 10 countries, namely, Ethiopia, Iraq, Jordan, Kenya, Malaysia, Nepal, Thailand, Rwanda, South Africa and Uganda.<sup>3</sup> Children with unknown height and weight were not included in this report.



Weight measurement in a child refugee as part of the IOM routine health assessment and resettlement activities in Nepal. © IOM 2014 (Photo: R. Rama)

<sup>1</sup> Undernutrition is a result of a deficiency in nutrients of the body that can take the form of acute malnutrition, stunting, underweight and micronutrient deficiencies.

<sup>2</sup> Prevalence is the proportion of individuals in a population who have a specific disease or condition at a particular moment in time. The prevalence of malnutrition is equal to the number of malnourished children divided by all children examined.

<sup>3</sup> IOM's nutrition surveillance reports for 2011 and 2012 covered only the first seven countries mentioned.

As recommended for population-based assessments, the Z-score system of expressing indicators as number of standard deviations (SD) or Z-scores above or below reference mean was used. The World Health Organization Global Database on Child Growth and Malnutrition uses a Z-score cut-off point of less than -2 SD to classify low weight-for-age (underweight), low height-for-age (stunted) and low weight-for-height (wasted) as moderate undernutrition, and less than -3 SD to define severe undernutrition. The cut-off point of greater than +2 SD classifies high weight-for-height as overweight in children. See summary table of the WHO cut-offs of moderate and severe malnutrition.



**Table 1: Nutrition indicators and WHO cut-offs of moderate and severe malnutrition**

Indicator	Measure	Definition	Moderate	Severe
Wasting	WFH	Inadequate weight relative to height or length	< -2 and ≥ -3 z-score	< -3 z-score
Stunting	HFA	Inadequate height or length relative to age	< -2 and ≥ -3 z-score	< -3 z-score
Underweight	WFA	Inadequate weight relative to age	< -2 and ≥ -3 z-score	< -3 z-score

Analysis was done using the WHO igrowup Stata package (version 3.2.2, January 2011), which utilizes the 2006 Child Growth Standards<sup>4</sup> to generate estimates of wasting, stunting and underweight. The severity or public health importance of malnutrition among refugees aged 6–59

months examined in various countries – overall and at specific sites or locations – was assessed using “trigger levels” or prevalence ranges recommended by WHO (see Table 2).

**Table 2: WHO classification for assessing severity of malnutrition by prevalence ranges among children under 5 years of age**

Indicator	Severity of malnutrition by prevalence ranges			
	Low	Medium	High	Very high
% Wasting	<5	5–9	10–14	>15
% Stunting	<20	20–29	30–39	>40
% Underweight	<10	10–19	20–29	>30

The prevalence of wasting in previous years is presented to show an overview of observed changes at each site. Confidence interval (CI) estimates of prevalence proportions obtained for each location are compared for the first seven countries over 2011, 2012 and 2013. Statistically significant differences in cross-sectional

prevalence of wasting between and among location were noted in cases where CIs did not overlap.

## Summary of findings

A total of 9,063 refugee children (12% of all refugees examined in 2013) were included in this report. Overall, this sample showed medium wasting prevalence, low stunting prevalence and low underweight prevalence.

<sup>4</sup> The WHO 2006 Child Growth Standards were developed from a multicentre growth reference study that followed optimal child growth of a cohort of children from widely different ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and the United States of America).

The prevalence level of wasting was high among refugee children in Kenya; whereas, Uganda, Ethiopia, Rwanda, and Iraq had medium prevalence levels of wasting. Jordan, Nepal, Thailand, Malaysia and South Africa showed relatively low levels of wasting or acute malnutrition in refugee children. The prevalence levels of stunting were

high in Thailand, Rwanda and Ethiopia; and low in Nepal, Kenya, Uganda, Malaysia, Jordan, Iraq and South Africa. There was medium prevalence of underweight observed in Rwanda, Thailand, Kenya and Ethiopia. The rest of the countries had low prevalence of underweight. See Table 3 for the prevalence of malnutrition.

**Table 3: Prevalence of malnutrition among refugee children aged 6–59 months by country of exam, 2013 (%)**

Country	Wasting	Stunting	Underweight
Ethiopia (n=1,057)	6.7 (5.3–8.4)	31.1 (28.3–34.0)	10.2 (8.5–12.2)
Iraq (n=1,559)	6.2 (5.1–7.5)	5.8 (4.7–7.0)	3.3 (2.5–4.4)
Jordan (n=444)	4.3 (2.6–6.6)	6.8 (4.6–9.5)	2.3 (1.1–4.1)
Kenya (n=1,173)	11.1 (9.3–13)	16.8 (14.7–19.1)	14.4 (12.4–16.5)
Malaysia (n=1,521)	2.8 (2.0–3.7)	9.7 (8.3–11.3)	5.1 (4.1–6.4)
Nepal (n=962)	3.7 (2.6–5.1)	18.9 (16.5–21.5)	9.1 (7.4–11.1)
Rwanda (n=187)	6.4 (3.4–10.9)	32.1 (25.5–39.3)	15.5 (10.6–21.5)
South Africa (n=453)	0.4 (0.1–1.6)	2.0 (0.9–3.7)	0.9 (0.2–2.2)
Thailand (n=1,353)	3.2 (2.3–4.3)	38.1 (35.5–40.8)	14.7 (12.9–16.7)
Uganda (n=354)	8.8 (6.0–12.2)	9.9 (7.0–13.5)	5.1 (3.0–7.9)
<b>TOTAL (n=9,063)</b>	<b>5.3 (4.9–5.8)</b>	<b>17.6 (16.8–18.4)</b>	<b>8.3 (7.8–8.9)</b>

Note: Figures in parenthesis show the 95 per cent CI.

The prevalence of overweight among the refugee children was 7.8 per cent. South Africa had the highest prevalence (21.4%), followed by Jordan (16.7%) and Ethiopia (9.6%). Thailand had the lowest prevalence (2.2%), closely followed by Nepal (2.8%).

Thus, based on our findings: Kenya (in which the majority of refugees were from Somalia) had high prevalence of wasting and medium prevalence of underweight; Ethiopia (in which the majority of refugees were from Somalia and Eritrea) and Rwanda had high prevalence of stunting

and medium prevalence of wasting and underweight; and Thailand (in which the majority of refugees were from Myanmar) had high level of stunting and medium prevalence of underweight among the under-five refugee children examined by IOM.

Further, findings showed that all refugees assessed from Somalia had medium prevalence of wasting, low stunting and medium underweight. Refugees from Myanmar had low prevalence of wasting, medium stunting and low underweight.

This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in three sites, namely, Addis Ababa, Jijiga<sup>5</sup> and Shire<sup>6</sup> from January to December 2013.

## Demographic characteristics

There were a total of 1,057 children aged 6–59 months, with a mean age of 33 months across the sites assessed in Ethiopia. Half of the refugee children were assessed in Jijiga (50.6%, n=535) and over 30 per cent were assessed in Addis Ababa (n=353). A small proportion of the children were assessed in Shire (16%).

There was a similar distribution of male and female children in all sites (sex ratio of 1.0). The majority of the children in Addis Ababa and Jijiga came from Somalia (57.5% and 98.5%, respectively), while all children assessed in Shire came from Eritrea.

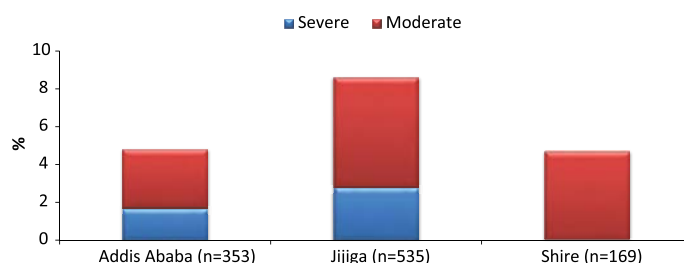
## Findings

For all refugee children aged 6–59 months examined in Ethiopia, the prevalence of wasting was medium (6.7%; 95% CI = 5.3% to 8.4%) while stunting was high (31.1%; 95% CI = 28.3% to 34.0%). About 10 per cent of the refugee children were overweight (n=101).

Wasting was medium in Jijiga (8.6%; 95% CI = 6.4% to 11.3%), and low in Shire (4.7%; 95% CI = 2.1% to 9.1%) and Addis Ababa (4.8%; 95% CI = 2.8% to 7.6%). Moreover, the prevalence of stunting was high in Jijiga (32.9%; 95% CI = 28.9% to 37.1%) and medium in Addis Ababa (29.7%; 95% CI = 25% to 34.8%) and Shire (28.4%; 95% CI = 21.7% to 35.8%). There was medium prevalence of underweight in Jijiga (13.3%; 95% CI = 10.5% to 16.4%) and low levels of underweight in other sites (see Figures 1–3).

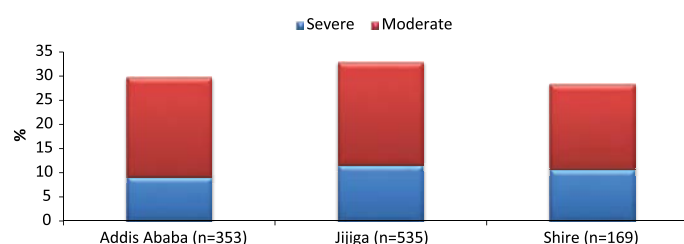
Figure 4 shows the malnutrition prevalence among children from the Democratic Republic of the Congo, Somalia and Eritrea.<sup>7</sup> A high level of stunting (34.8%; 95% CI = 31.3% to 38.4%) and medium levels of wasting (7.8%; 95% CI = 6% to 10%) and underweight (13%; 95% CI = 10.7% to 15.7%) were observed among children from Somalia. There was medium prevalence of stunting (25.1%; 95% CI = 19.9% to 30.9%) and low levels of wasting (4.3%; 95% CI = 2.2% to 7.6%) and underweight (4.7%; 95% CI = 2.5% to 8.1%) among children from Eritrea.

**Figure 1: Prevalence of wasting among refugee children aged 6–59 months, Ethiopia, 2013**



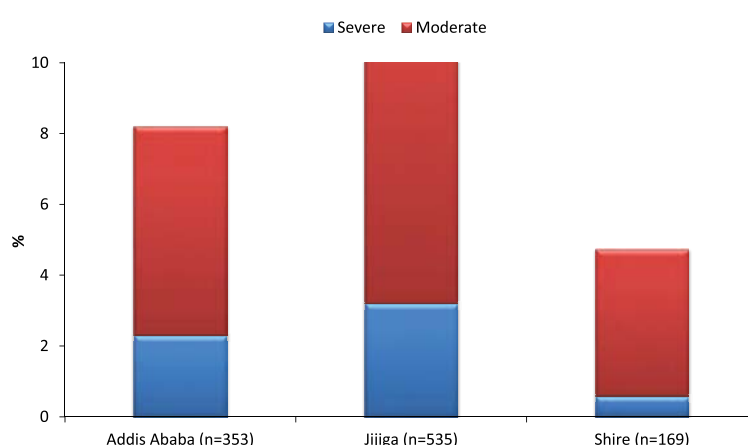
Note: n=1,057.

**Figure 2: Prevalence of stunting among refugee children aged 6–59 months, Ethiopia, 2013**



Note: n=1,057.

**Figure 3: Prevalence of underweight among refugee children aged 6–59 months, Ethiopia, 2013**



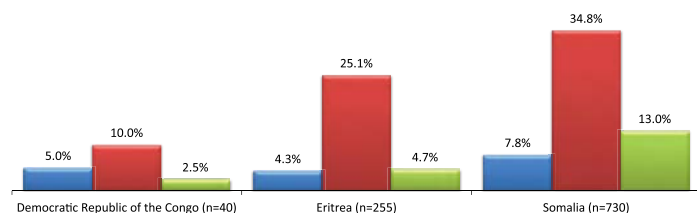
Note: n=1,057.

<sup>5</sup> Jijiga serves refugees in Dire Dawa, Sheder, Aw-barre, and Kebribeyah.

<sup>6</sup> Shire also serves refugees in Shimelba.

<sup>7</sup> Only one stunted child from South Sudan (n=5), three from Sudan (n=9), and three from Ethiopia (n=17). The child from Burundi (n=1) was normal.

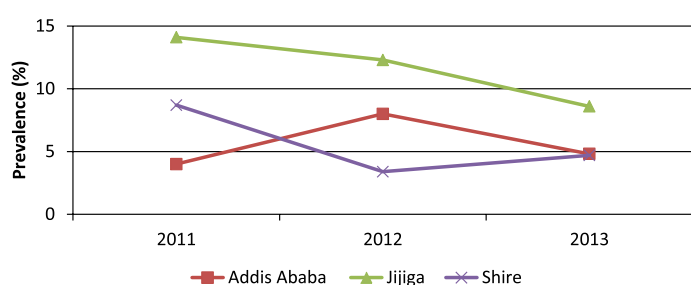
**Figure 4: Prevalence of malnutrition among refugee children aged 6–59 months by country of origin, Ethiopia, 2013**



Note: n=1,025.

The observed prevalence of wasting in previous years is shown in Figure 5. Compared with 2012, the prevalence of wasting in 2013 decreased in Addis Ababa (by 3.2%), Jijiga (by 3.7%) and Shire (by 3.4%).

**Figure 5: Trends in prevalence of wasting, Ethiopia, 2011–2013**





This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Baghdad and Erbil from January to December 2013.

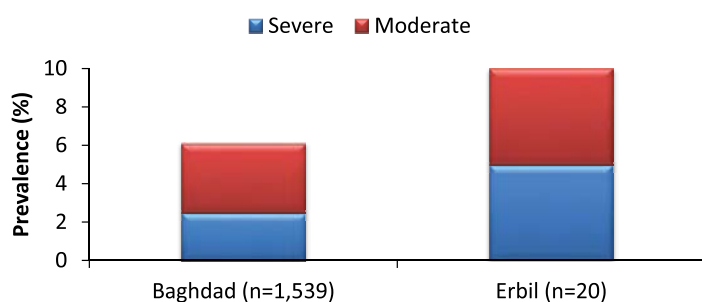
## Demographic characteristics

There were a total of 1,559 children examined in Iraq, with a mean age of 33 months and a sex ratio (male-to-female) of 1:1. Almost all of the children came from Iraq (99.7%; n=1,555) and the rest came from the Occupied Palestinian Territory, Sudan and the Syrian Arab Republic.

## Findings

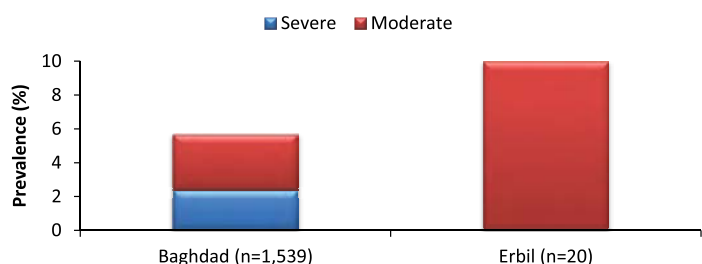
Among all refugees aged 6–59 months examined in Baghdad, the prevalence of wasting (6.2%; 95% CI = 5.0% to 7.5%) was medium, and the prevalence of stunting (5.7%; 95% CI = 4.6% to 7.0%) and underweight (3.3%; 95% CI = 2.5% to 4.3%) were low (see Figures 5–7). Medium prevalence was observed for wasting (6.2%; 95% CI = 5.1% to 7.6%), and low prevalence was observed for stunting (5.8%; 95% CI = 4.7% to 7.1%) and underweight (3.3%; 95% CI = 2.5% to 4.4%) among children who came from Iraq.<sup>8</sup>

**Figure 6: Prevalence of wasting among refugee children aged 6–59 months, Iraq, 2013**



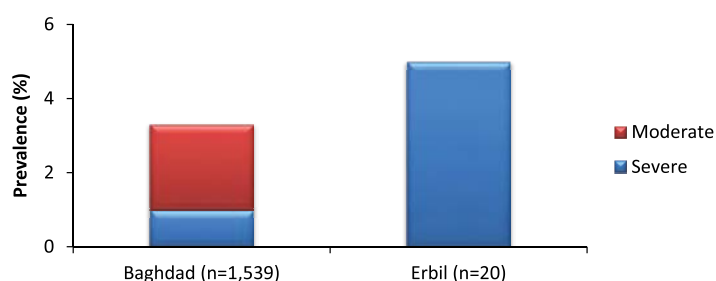
Note: n=1,559.

**Figure 7: Prevalence of stunting among refugee children aged 6–59 months, Iraq, 2013**



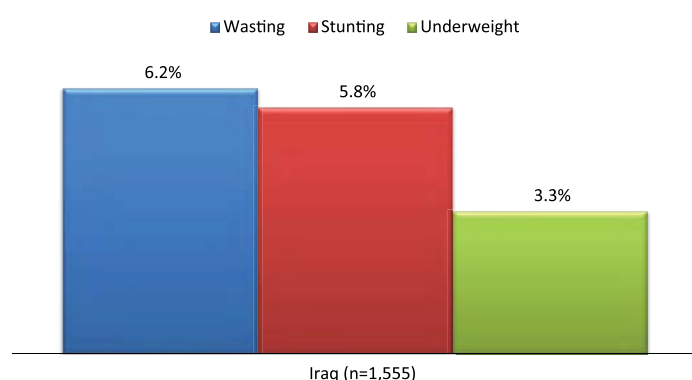
Note: n=1,559.

**Figure 8: Prevalence of underweight among refugee children aged 6–59 months, Iraq, 2013**



Note: n=1,559.

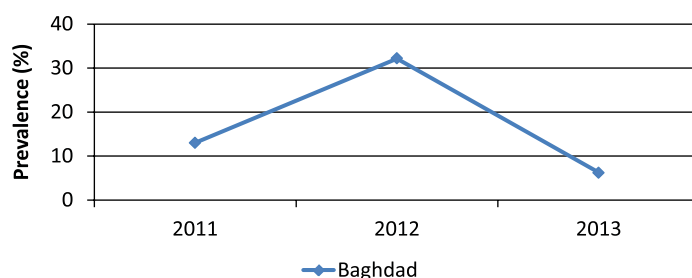
**Figure 9: Prevalence of malnutrition among refugee children aged 6–59 months, Iraq, 2013**



Note: n=1,555.

Nutrition data for refugee children in Baghdad over the past three years are shown in Figure 10. From 2012 to 2013, the prevalence of wasting decreased from very high (32.2%; 95% CI = 27.5% to 37%) to low (6.2%; 95% CI = 5% to 7.5%), and this difference is found to be statistically significant.

**Figure 10: Trends in prevalence of wasting, Iraq, 2011–2013**



<sup>8</sup> None were found among refugee children from the Occupied Palestinian Territory (n=2), Sudan (n=1), and the Syrian Arab Republic (n=1).

This section covers data on the nutrition status of refugees aged 6–59 months assisted by IOM in Amman from January to December 2013.

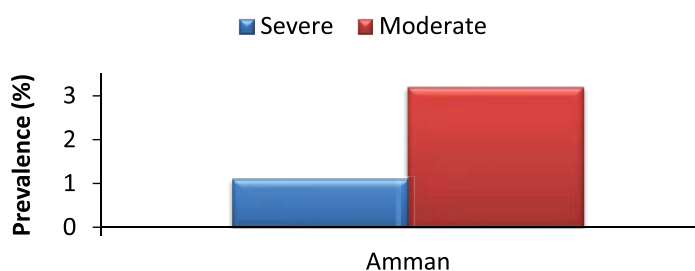
## Demographic characteristics

There were a total of 444 children aged 6–59 months with a mean age of 32 months and a sex ratio of 1:1 assessed in Jordan. Almost all the children examined in Amman were from Iraq (93.2%), while the rest came from Sudan (5.0%), Jordan (0.7%), the Occupied Palestinian Territory (0.5%), Somalia (0.5%) and the Syrian Arab Republic (0.2%).

## Findings

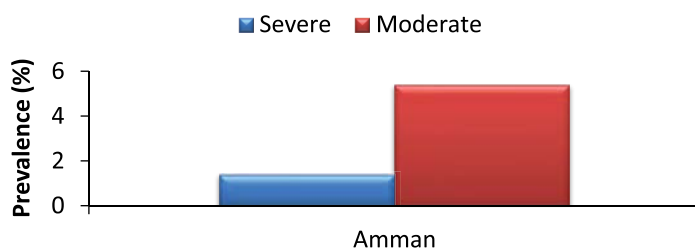
Overall, among refugees aged 6–59 months, prevalence levels of wasting (4.3%; 95% CI = 2.6% to 6.6%), stunting (6.8%; 95% CI = 4.6% to 9.5%) and underweight (2.3%; 95% CI = 1.1% to 4.1%) in Amman were low (see Figures 11–13). Overall, low prevalence of malnutrition was observed among refugee children who came from Iraq and Sudan (see Figure 14).<sup>9</sup>

**Figure 11: Prevalence of wasting among refugee children aged 6–59 months, Jordan, 2013**



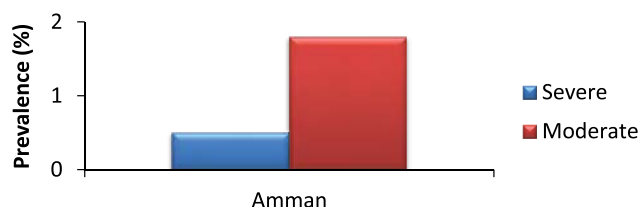
Note: n=444.

**Figure 12: Prevalence of stunting among refugee children aged 6–59 months, Jordan, 2013**



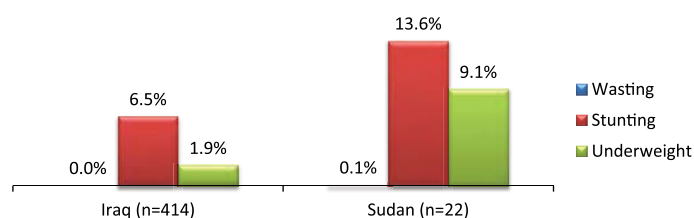
Note: n=444.

**Figure 13: Prevalence of underweight among refugee children aged 6–59 months, Jordan, 2013**



Note: n=444.

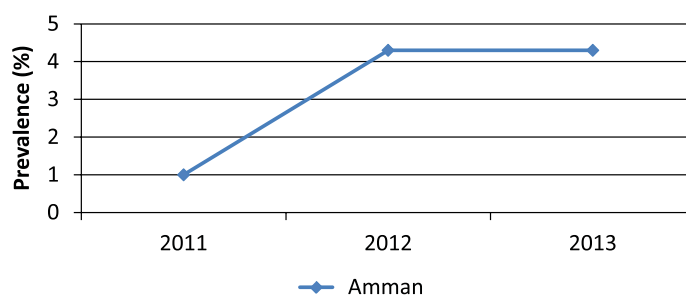
**Figure 14: Prevalence of malnutrition among refugee children aged 6–59 months by country of origin, Jordan, 2013**



Note: n=436.

The annual prevalence of wasting over the past three years was low, with no change observed from 2012 to 2013 (see Figure 15).

**Figure 15: Trends in prevalence of wasting, Jordan, 2011–2013**



<sup>9</sup> No undernourished child from Jordan (n=3), the Occupied Palestinian Territory (n=2) and Somalia (n=2).

This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in three sites – Dadaab, Kakuma and Nairobi – from January to December 2013.

## Demographic characteristics

There were a total of 1,173 children aged 6–59 months with a mean age of 33 months and a sex ratio of 1:1. About 70 per cent of the children were assisted in Kakuma, followed by Dadaab (20.8%) and Nairobi (9.3%).

The majority of the children assisted in Dadaab and Kakuma were of Somali origin (96.7% and 86.7%, respectively). In Kakuma, the rest of the children were from Ethiopia (7%), Sudan (3.9%), South Sudan (1.7%), Burundi (0.4%), the Democratic Republic of the Congo (0.1%), Kenya (0.1%) and Uganda (0.1%). In Nairobi, majority of the children were from Ethiopia (45.9%) and Somalia (31.2%), while the rest of the children originated from the Democratic Republic of the Congo (17.4%), Eritrea (1.8%), Sudan (1.8%), Kenya (0.9%) and Rwanda (0.9%).

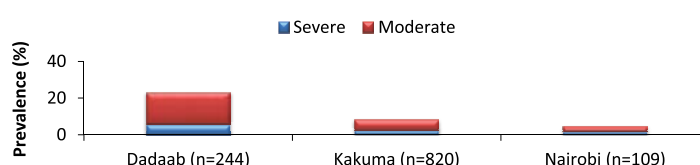
## Findings

Overall, among refugees aged 6–59 months in Kenya, the severity of wasting was high (11.1%; 95% CI = 9.3% to 13%), stunting was low (16.8%; 95% CI = 14.7% to 19.1%) and underweight was medium (14.4%; 95% CI = 12.4% to 16.5%). Overweight refugee children were low at 3 per cent (n=37).

In Dadaab, the severity of wasting was very high at 23 per cent (95% CI = 17.8% to 28.9%). In Kakuma, there was medium prevalence of wasting (8.4%; 95% CI = 6.6% to 10.5%), while there was low prevalence in Nairobi (4.6%; 95% CI = 1.5% to 10.4%). In terms of stunting, Dadaab had medium severity (20.1%; 95% CI = 15.3% to 25.7%), while there were low severity levels in Kakuma (16.7%; 95% CI = 14.2% to 19.4%) and Nairobi (10.1%; 95% CI = 5.1% to 17.3%). On the prevalence of underweight, severity was high in Dadaab (26.6%; 95% CI = 21.2% to 32.7%), medium in Kakuma (12%; 95% CI = 9.8% to 14.4%) and low in Nairobi (5.5%; 95% CI = 2% to 11.6%) (see Figures 16–18).

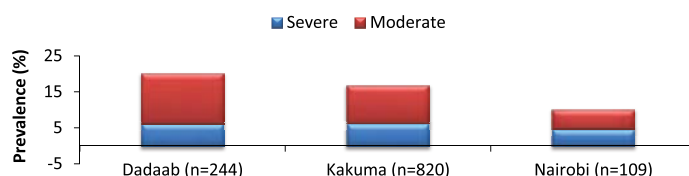
Among the refugee children who came from Somalia, wasting was high (11.9%; 95% CI = 10% to 14.1%), stunting was low (17.9%; 95% CI = 15.6% to 20.5%) and underweight was at the medium level (15.6%; 95% CI = 13.4% to 18%) (see Figure 19).<sup>10</sup>

**Figure 16: Prevalence of wasting among refugee children aged 6–59 months, Kenya, 2013**



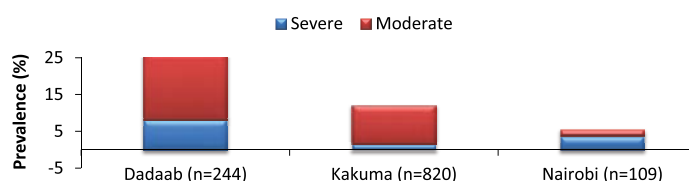
Note: n=1,173.

**Figure 17: Prevalence of stunting among refugee children aged 6–59 months, Kenya, 2013**



Note: n=1,173.

**Figure 18: Prevalence of underweight among refugee children aged 6–59 months, Kenya, 2013**

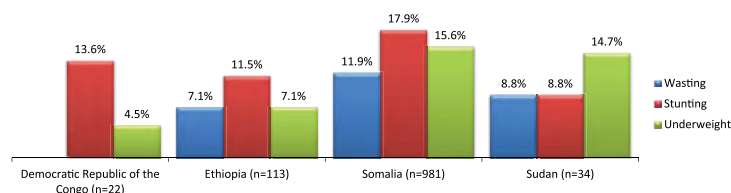


Note: n=1,173.

<sup>10</sup> No undernourished child from Eritrea (n=2), Kenya (n=2), Rwanda (n=1) and South Sudan (n=14).



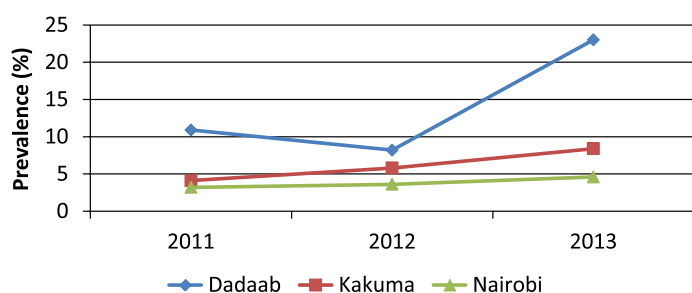
**Figure 19: Prevalence of malnutrition among refugee children aged 6–59 months by country of origin, Kenya, 2013**



Note: n=1,150.

Figure 20 shows the prevalence of wasting in the last three years at all sites in Kenya. From 2012 to 2013, the prevalence of wasting increased in all sites in Kenya. The highest increase was in Dadaab, where the prevalence of wasting increased by 15.2 per cent (statistically significant).

**Figure 20: Trends in prevalence of wasting, Kenya, 2011–2013**



This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Kuala Lumpur from January to December 2013.

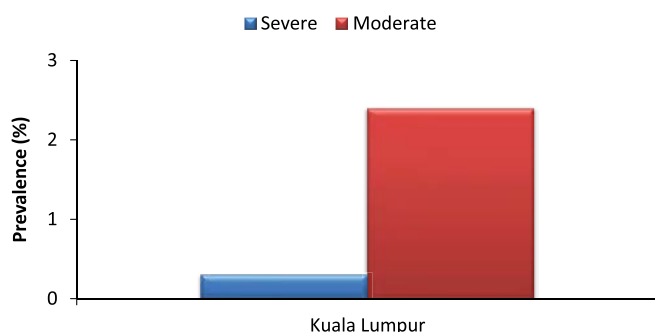
## Demographic characteristics

There were a total of 1,521 children aged 6–59 months with a mean age of 27 months and an equal representation between males and females examined in Kuala Lumpur. Almost all children examined were from Myanmar (97.4%), while the rest of the children came from Afghanistan, Bermuda, Eritrea, Iraq, the Islamic Republic of Iran, Kenya, Liberia, Pakistan, the Occupied Palestinian Territory, Sri Lanka, Somalia and Yemen.

## Findings

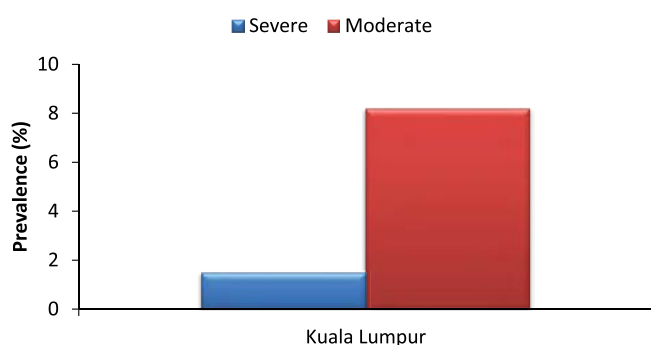
Overall, the malnutrition levels of refugee children assisted in Kuala Lumpur were low: wasting (2.8%; 95% CI = 2.0% to 3.7%), stunting (9.7%; 95% CI = 8.3% to 11.3%) and underweight (5.1%; 95% CI = 5.4% to 8%) (see Figures 21–24).<sup>11</sup> Overweight was found in 6 per cent of the refugee children.

**Figure 21: Prevalence of wasting among refugee children aged 6–59 months, Malaysia, 2013**



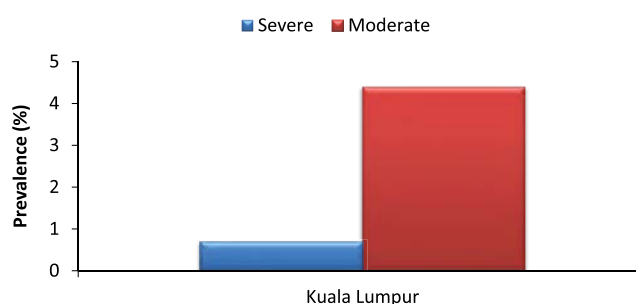
Note: n=1,521.

**Figure 22: Prevalence of stunting among refugee children aged 6–59 months, Malaysia, 2013**



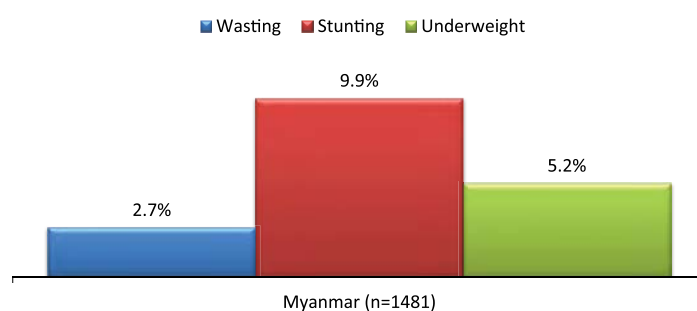
Note: n=1,521.

**Figure 23: Prevalence of underweight among refugee children aged 6–59 months, Malaysia, 2013**



Note: n=1,521.

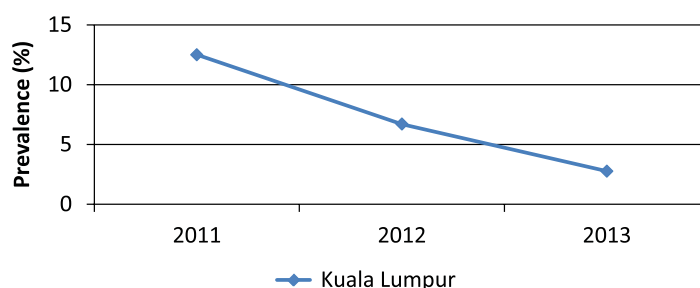
**Figure 24: Prevalence of malnutrition among refugee children from Myanmar, aged 6–59 months, Malaysia, 2013**



Note: n=1,481.

The annual prevalence of wasting among refugee children examined in Malaysia decreased from 2011 to 2013; from high severity of wasting in 2011 to low in 2013 (see Figure 25). The decrease in prevalence of wasting from 2012 to 2013 is found to be statistically significant.

**Figure 25: Trends in prevalence of wasting, Malaysia, 2011–2013**



<sup>11</sup> Undernourished children from other nationalities: one stunted child from the Occupied Palestinian Territory (n=8); one wasted and underweight child from Sri Lanka (n=1); one wasted and underweight child from Yemen (n=2); and one wasted, two stunted and one underweight child from Somalia (n=11).

This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM at Beldangi I, Beldangi II, Beldangi II Extension, Kathmandu, Sanischare and other locations from January to December 2013.

## Demographic characteristics

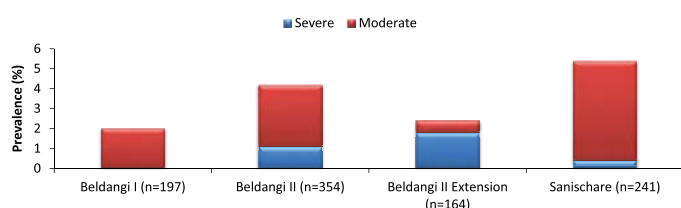
There were a total of 962 refugee children aged 6–59 months, with a mean age of 29 months and a sex ratio of 1:1, at all sites in Nepal. Most of the children were assessed in Beldangi II (36.8%), Sanischare (25.1%), and Beldangi I (20.5%) and Beldangi II Extension (17.0%), while a few were assessed in Kathmandu (0.4%) and in locations outside the camps (0.2%). Nearly all of the examined children were from Bhutan (99.6%).<sup>12</sup>

## Findings

For all refugees examined at various sites in Nepal, the prevalence levels of wasting (3.7%; 95% CI = 2.6% to 5.1%), stunting (18.9%; 95% CI = 16.5% to 21.5%) and underweight were low (9.1%; 95% CI = 7.4% to 11.1%). Overweight was found in around 3 per cent of the children.

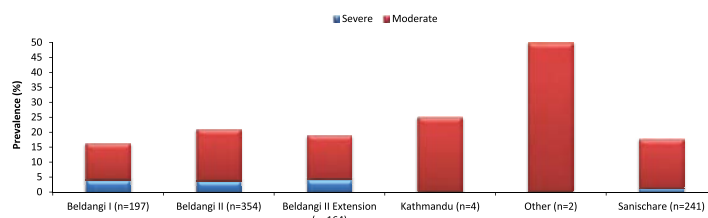
The severity of wasting was medium in Sanischare (5.4%; 95% CI = 2.9% to 9%), whereas the prevalence of stunting (20.9%; 95% CI = 16.8% to 25.5%) and underweight (11%; 95% CI = 8.0% to 14.8%) in Beldangi II were medium. Children who came from Bhutan had low levels of wasting (3.8%; 95% CI = 2.6% to 5.2%), stunting (18.9%; 95% CI = 16.5% to 21.5%) and underweight (9.1%; 95% CI = 7.3% to 11.1%)<sup>13</sup> (see Figures 26–29).

**Figure 26: Prevalence of wasting among refugee children aged 6–59 months, Nepal, 2013**



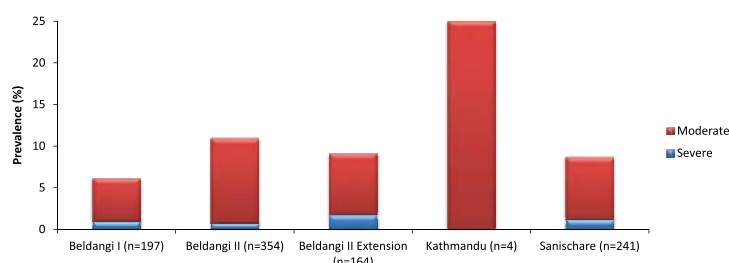
Note: n=962.

**Figure 27: Prevalence of stunting among refugee children aged 6–59 months, Nepal, 2013**



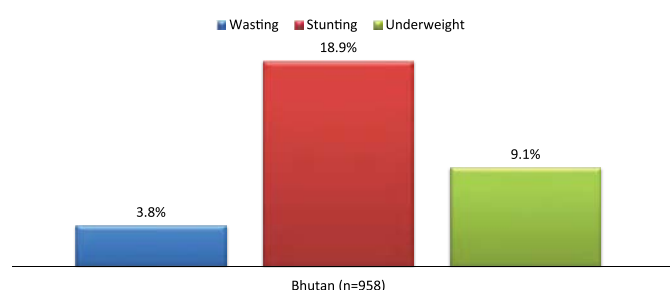
Note: n=962.

**Figure 28: Prevalence of underweight among refugee children aged 6–59 months, Nepal, 2013**



Note: n=962.

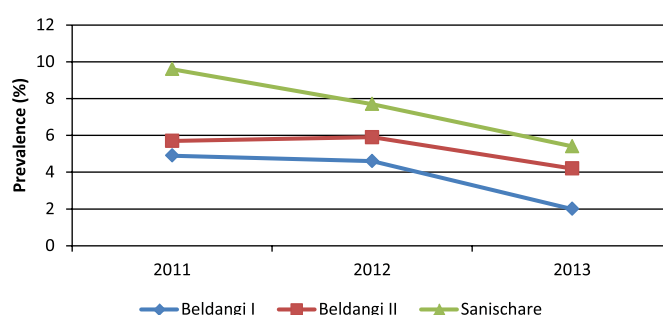
**Figure 29: Prevalence of malnutrition among refugee children from Bhutan, aged 6–59 months, Nepal, 2013**



Note: n=958.

Figure 30 shows the prevalence of wasting in the last three years among 6- to 59-month-old refugees examined in Beldangi I, Beldangi II and Sanischare. A general decline from previous years was observed across all sites.

**Figure 30: Trends in prevalence of wasting, Nepal, 2011–2013**



<sup>12</sup> The rest of the refugee children came from Nepal (n=2), Pakistan (n=1) and Somalia (n=1).

<sup>13</sup> The children from Nepal were stunted and underweight. There was no undernourished child from Pakistan and Somalia.

This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Ban Don Yang, Ban Mae Surin, Ban Mai Nai Soi, Bangkok, Mae La, Mae La Oon, Mae Ra Ma Luang, Mae Sot, Nupo, Suan Phlu Immigration Detention Centre (IDC), Tham Hin and Umpiem camps from January to December 2013.

## Demographic characteristics

There were a total of 1,353 refugee children with a mean age of 32 months and a sex ratio of 1:0, examined at all sites in Thailand. Majority of these children came from Myanmar (95.1%). The refugee camps with more than 100 children assessed included Ban Mai Nai Soi, Mae La, Mae La Oon, Mae Ra Ma Luang and Umpiem. The locations that assessed between 29 and 49 children were in Ban Don Yang, Bangkok and Ban Mae Surin camps. The other locations that covered fewer than 20 children included Mae Sot, Suan Phlu IDC and Tham Hin camps.

## Findings

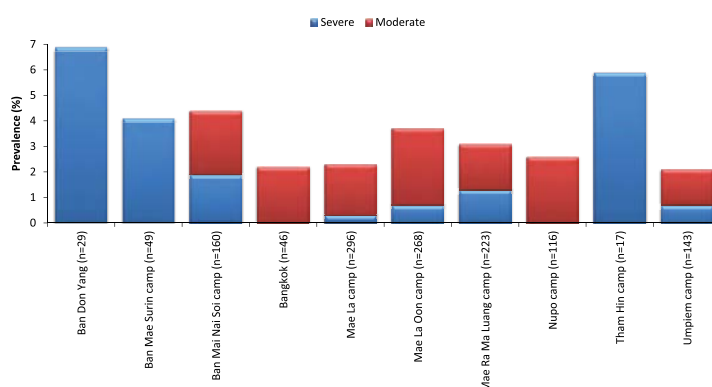
Overall, the assessment of malnutrition among refugees in Thailand, aged 6–59 months, showed low severity of wasting (3.2%; 95% CI = 2.3% to 4.3%) with a high level of stunting (38.1%; 95% CI = 35.5% to 40.8%) and a medium level of underweight (14.7%; 95% CI = 12.9% to 16.7%). Overweight is found in 2 per cent of the children assisted. The severity of wasting among refugees was low in all camps with more than 100 children assessed. Both Ban Don Yang (6.9%; 95% CI = 0.8% to 22.8%) and Tham Hin (5.9%; 95% CI = 0.1% to 28.7%) had medium prevalence of wasting.<sup>14</sup> A very high level of stunting was found among children in Mae Ra Ma Luang (45.7%; 95% CI = 39.1% to 52.5%), Mae La Oon (43.3%; 95% CI = 37.3% to 49.4%), Nupo (43.1%; 95% CI = 33.9% to 52.6%) and Mae La (40.5%; 95% CI = 34.9% to 46.4%). Stunting in Umpiem camp was high (35.7%).

For underweight, medium prevalence was noted in Nupo (17.2%; 95% CI = 10.9% to 25.4%), Mae La Oon (16.8%; 95% CI = 12.5% to 21.8%), Mae Ra Ma Luang (16.1%; 95% CI = 11.6% to 21.6%), Umpiem (13.3%; 95% CI = 8.2% to 20%), Mae La (13.2%; 95% CI = 9.5% to 17.6%) and Ban Mai Nai Soi (11.3%; 95% CI = 6.8% to 17.2%). The rest of the camps with only 49 or fewer children have high prevalence of

underweight except Bangkok: Tham Hin (29.4%; 95% CI = 10.3% to 56%), Ban Don Yang (24.1%; 95% CI = 10.3% to 43.5%) and Suan Phlu IDC (20%; 95% CI = 0.5% to 71.6%) (see Figures 31–33).

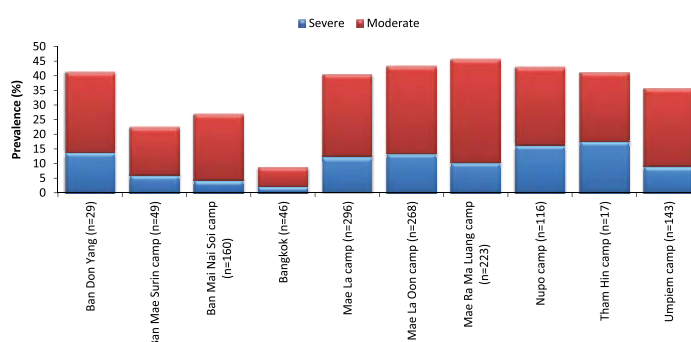
Among refugee children from Myanmar, there were low wasting (3.3%; 95% CI = 0.8% to 7%), high stunting (1.4%; 95% CI = 36.4% to 41.7%) and medium underweight (15.1%; 95% CI = 13.2% to 17.1%) (see Figure 34).<sup>15</sup>

**Figure 31: Prevalence of wasting among refugee children aged 6–59 months, Thailand, 2013**



Note: n=1,353.

**Figure 32: Prevalence of stunting among refugee children aged 6–59 months, Thailand, 2013**

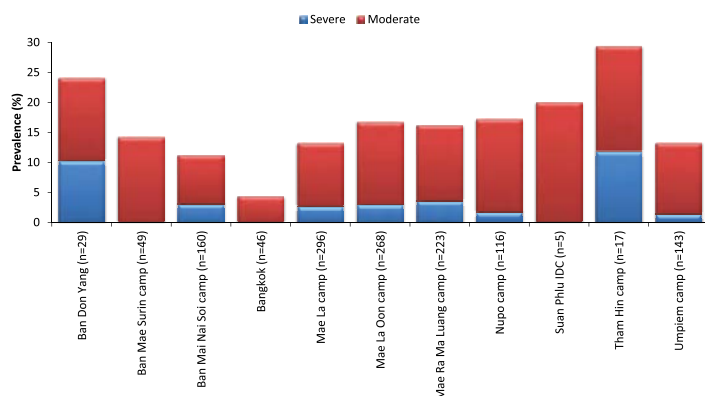


Note: n=1,353.

<sup>14</sup> No wasting and stunting was observed in Mae Sot (n=1) and Suan Phlu IDC (n=5).

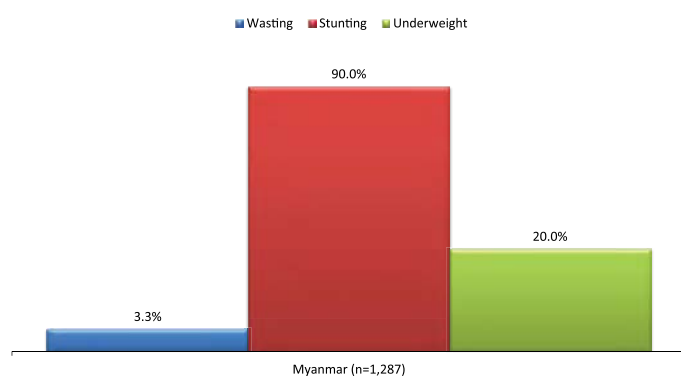
<sup>15</sup> There were three stunted and two underweight children from Cambodia (n=6), one wasted child from China (n=4), one underweight child from Pakistan (n=20), one stunted from Somalia (n=10) and one stunted from Thailand (n=5). Nearly all children from Myanmar (n=10) were stunted.

**Figure 33: Prevalence of underweight among refugee children aged 6–59 months, Thailand, 2013**



Note: n=1,353.

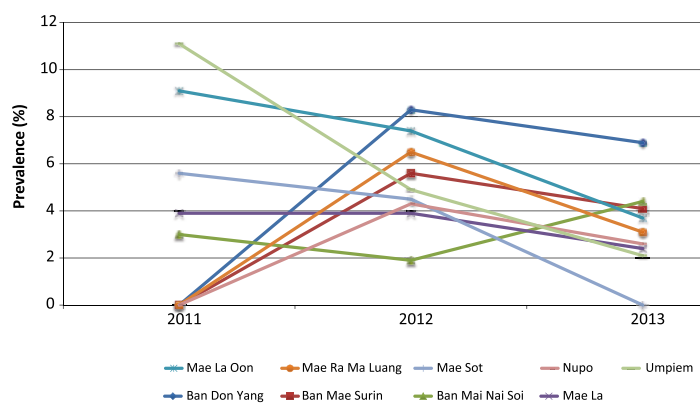
**Figure 34: Prevalence of malnutrition among refugee children from Myanmar, aged 6–59 months, Thailand, 2013**



Note: n=1,287.

Compared with 2012, a decline in prevalence of wasting is observed across most sites in 2013 (decrease ranged at 1% to 4.5%), except in Ban Mai Nai Soi camp (increased by 2.5%) (see Figure 35).

**Figure 35: Trends in prevalence of wasting, Thailand, 2011–2013**



This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Byumba, Kibuye and Kigali from January to December 2013.

## Demographic characteristics

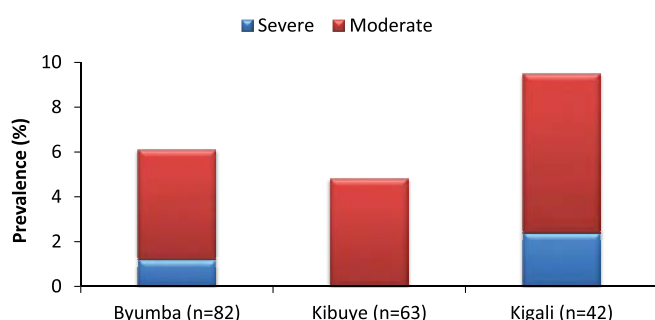
There were a total of 187 refugee children, aged 6–59 months with a mean age of 32 months and a sex ratio of 1:1, examined at all sites in Rwanda. Majority of these children came from the Democratic Republic of the Congo (97.3%) and the rest came from Rwanda (n=5).

## Findings

Overall, the assessment of malnutrition among refugees aged 6–59 months in Rwanda showed medium severity of wasting (6.4%; 95% CI = 3.4% to 10.9%) and underweight (15.5%; 95% CI = 10.6% to 21.5%), with a high level of stunting (32.1%; 95% CI = 25.5% to 39.3%). Overweight was found in 6 per cent of the children.

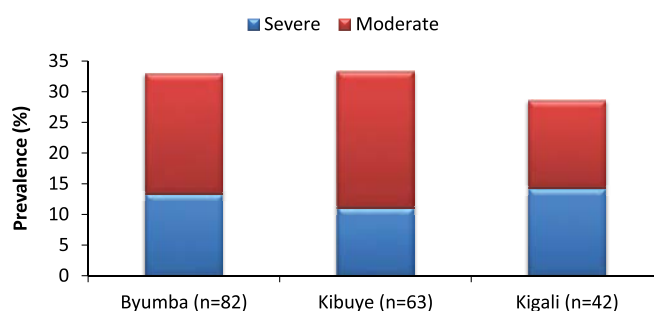
The level of wasting in Kigali was high (9.5%; 95% CI = 26.6% to 22.6%), with medium levels of stunting (28.6%; 95% CI = 15.7% to 44.6%) and underweight (11.9%; 95% CI = 4% to 25.6%). Refugee children seen in Byumba had medium wasting (6.1%; 95% CI = 2% to 13.7%) and high levels of stunting (32.9%; 95% CI = 22.9% to 44.2%) and underweight (19.5%; 95% CI = 11.6% to 29.7%), whereas Kibuye had high stunting (33.3%; 95% CI = 22% to 46.3%), medium underweight (12.7%; 95% CI = 5.6% to 23.5%) and low wasting (4.8%; 95% CI = 1% to 13.3%). Children from the Democratic Republic of the Congo had high stunting (33%; 95% CI = 26.2% to 40.3%) and medium levels of wasting (6.6%; 95% CI = 3.5% to 11.2%) and underweight (15.9%; 95% CI = 10.9% to 22.1%) (see Figures 36–39).

**Figure 36: Prevalence of wasting among refugee children aged 6–59 months, Rwanda, 2013**



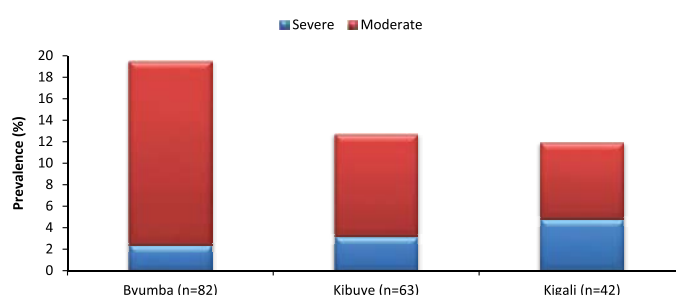
Note: n=187.

**Figure 37: Prevalence of stunting among refugee children aged 6–59 months, Rwanda, 2013**



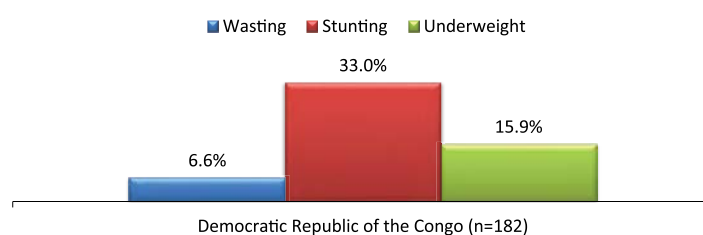
Note: n=187.

**Figure 38: Prevalence of underweight among refugee children aged 6–59 months, Rwanda, 2013**



Note: n=187.

**Figure 39: Prevalence of malnutrition among refugee children from the Democratic Republic of the Congo, aged 6–59 months, Rwanda, 2013**



Note: n=182.



This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Pretoria, Port Elizabeth, Cape Town and Durban from January to December 2013.

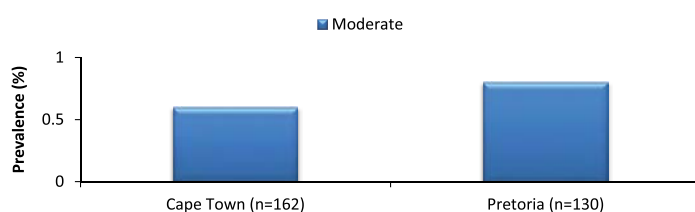
## Demographic characteristics

There were a total of 453 refugee children, aged 6–59 months with a mean age of 33 months and a sex ratio of 1:0, examined at all sites in South Africa. Majority of these children came from Somalia (93.6%) and the rest came from the Democratic Republic of the Congo, Ethiopia, Burundi, Rwanda and South Africa.

## Findings

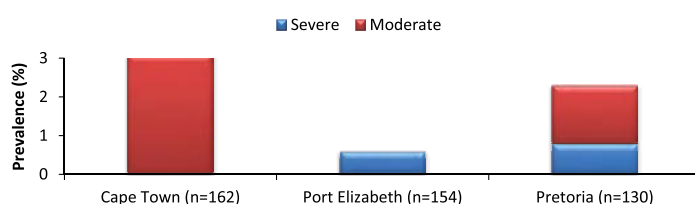
Overall, the assessment of malnutrition among refugees in South Africa showed low levels of wasting (0.4%; 95% CI = 0.1% to 1.6%), stunting (2%; 95% CI = 0.9% to 3.7%)<sup>16</sup> and underweight (0.9%; 95% CI = 0.2% to 2.2%).<sup>17</sup> Overweight was found in 21 per cent of the children (see Figures 40–43).

**Figure 40: Prevalence of moderate wasting among refugee children aged 6–59 months, South Africa, 2013**



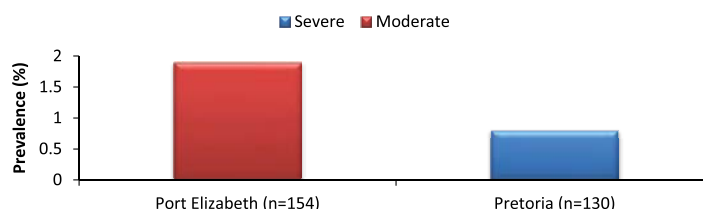
Note: n=453.

**Figure 41: Prevalence of stunting among refugee children aged 6–59 months, South Africa, 2013**



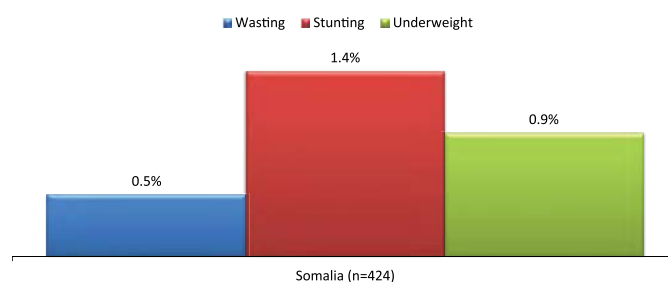
Note: n=453.

**Figure 42: Prevalence of underweight among refugee children aged 6–59 months, South Africa, 2013**



Note: n=453.

**Figure 43: Prevalence of malnutrition among refugee children from Somalia, aged 6–59 months, South Africa, 2013**



Note: n=424.

<sup>16</sup> One child from Ethiopia (n=8) was stunted.

<sup>17</sup> There were no wasting, stunting and underweight in Durban (n=7). There were no wasted children in Port Elizabeth (n=154) and no underweight children in Cape Town (n=162).

This section presents data on the nutrition status of refugees aged 6–59 months assisted by IOM in Kampala, Mbarara and Nakivale from January to December 2013.

## Demographic characteristics

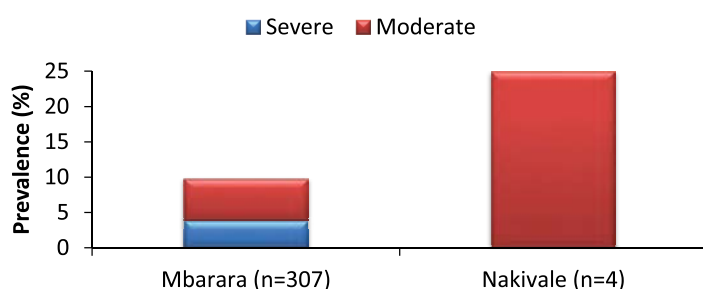
There were a total of 354 refugee children, aged 6–59 months with a mean age of 35 months and a sex ratio of 1:0, examined at all sites in Uganda. Majority of these children came from Somalia (81.9%), followed by the Democratic Republic of the Congo (14%). The remaining children (3.4%) came from Ethiopia, Rwanda, Sudan and Uganda.

## Findings

Overall, the assessment of malnutrition among refugees aged 6–59 months in Uganda showed medium severity of wasting (8.8%; 95% CI = 2.3% to 4.3%), with low levels of stunting (9.9%; 95% CI = 7% to 13.5%) and underweight (5.1%; 95% CI = 3% to 7.9%). Overweight was found in about 8 per cent of the refugee children.

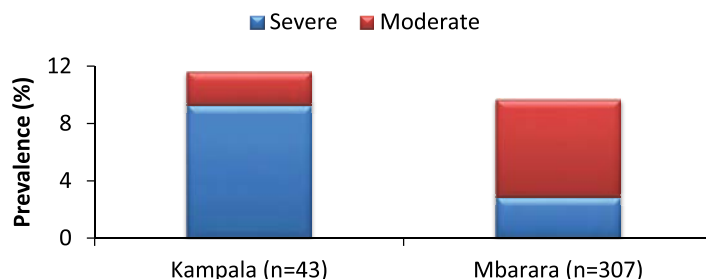
The severity of wasting among refugees aged 6–59 months in Mbarara was high (9.8%; 95% CI = 6.7% to 13.7%) and stunting levels in Kampala (11.6%; 95% CI = 3.9% to 25.1%) and Mbarara (9.8%; 95% CI = 6.7% to 13.7%) were low.<sup>18</sup> Among children who came from Somalia, a high level of wasting (10%; 95% CI = 6.8% to 14%) and low levels of stunting (8.3%; 95% CI = 5.4% to 12.1%) and underweight (5.5%; 95% CI = 3.2% to 8.8%)<sup>19</sup> were observed (see Figures 44–47).

**Figure 44: Prevalence of wasting among refugee children aged 6–59 months, Uganda, 2013**



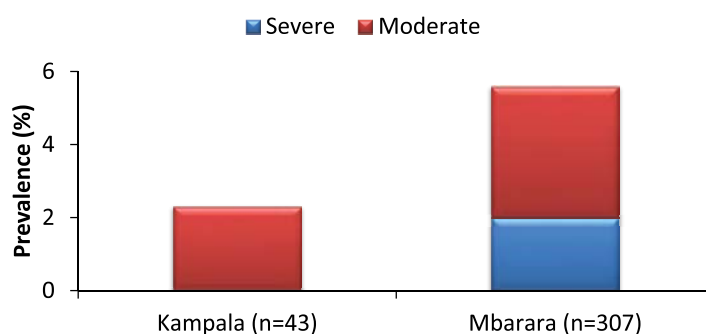
Note: n=354.

**Figure 45: Prevalence of stunting among refugee children aged 6–59 months, Uganda, 2013**



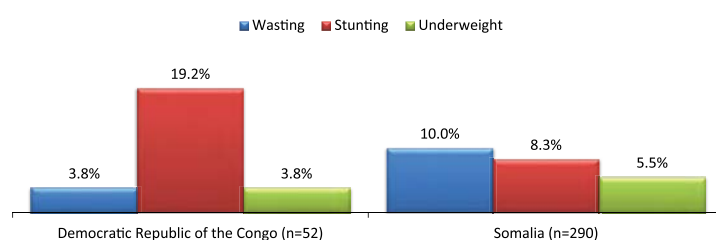
Note: n=354.

**Figure 46: Prevalence of underweight among refugee children aged 6–59 months, Uganda, 2013**



Note: n=354.

**Figure 47: Prevalence of malnutrition among refugee children aged 6–59 months by country of origin, Uganda, 2013**



Note: n=342.

<sup>18</sup> There was no presence of wasting in Kampala (n=43). In Nakivale (n=4), only one child was found to have moderate wasting and there were no stunted and underweight children.

<sup>19</sup> The child from Rwanda (n=1) was healthy and only one child from Ethiopia (n=7) was stunted.

## Comments on the interpretation of findings

The analysis included data from reported IOM sites where refugees were examined from January to December 2013. In addition, where anthropometric exam data were available for one or more previous years for selected countries, annual prevalence of wasting from 2011 to 2013 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. 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 report, observations with extreme weight and height or length values (against age of child) were communicated to IOM field programmes for verification.

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 (Young, 2004). Finally, resettlement populations across refugee settings in multiple sites as well as in different years in the same sites featured in this report are heterogeneous due to various factors, including origin, criteria for resettlement referrals, population size and length of stay in refugee settings. This limits generalization of findings to the overall refugee children populations in each country.

## Recommendations

Routine 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 the 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 (Young, 2004). The provision of Targeted Selective Feeding Programmes (SFP) is recommended for sites with high severity or serious prevalence of global acute malnutrition (wasting prevalence  $\geq 10\%$ ), such as the Dadaab camp in Kenya (23%). For those sites with aggravating factors, such as

high crude mortality rate, inadequate general food ration, epidemics of important communicable diseases, severe cold and inadequate shelter, the recommended approach is Blanket SFP (Young, 2004; UNHCR, 2011). Sites with medium prevalence of global acute malnutrition (wasting prevalence 5–9%) – such as Ethiopia, Kakuma in Kenya, Sanischare in Nepal and Ban Don Yang in Thailand – will warrant close monitoring of refugee children's nutrition status, especially in the presence of aggravating factors. WHO recommends a nutritionally adequate and suitable food rations to older infants and children, and ensuring easy access to water and sanitation facilities, cooking, and food and non-food items. It is further recommended that appropriate infant and young child feeding practices from 6 to 24 months and healthy maternal status be promoted, and attention be given to early identification and management of acute malnutrition in children (WHO, 2013). It is recommended that additional surveys identify and address underlying causes of malnutrition, prevalence of anemia and micronutrient deficiencies, and impact of nutrition interventions.

In the case of Nepal, guardians of refugee children with moderate to severe malnutrition are advised to consult the nutrition unit in the camps. Nutrition interventions include supplementary feeding of undernourished children, and pregnant and lactating women, whereas children in need of therapeutic feeding programmes are referred to the nutrition rehabilitation centres in government referral hospitals in the district (referred to as zonal hospitals).

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***Comments or Questions***

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