Prevalence of malnutrition risk, thinness, obesity and short stature in patients from a paediatric tertiary and district general hospitals

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Prevalence of malnutrition in hospitalised children has been mainly measured in tertiary hospitals. The introduction of a novel paediatric nutrition screening tool in both a tertiary paediatric (TPH) and a district general hospital (DGH) has resulted in the ability to assess variations in prevalence of malnutrition risk, obesity, thinness and short stature in these different settings.

Inpatients (≥ 1 year) from selected medical and surgical wards of a TPH and paediatric ward of a DGH were screened by the nursing staff, over a 4-month period, using the Paediatric Yorkhill Malnutrition Score – PYMS (malnutrition risk: low, medium and high)1. Thinness and obesity were defined as a BMI $z$-score ≤ −2 and ≥2, respectively. Short stature was defined as a height/length $z$-score ≤ −2. Social class was determined with the Scottish Index of Multiple Deprivation.

One thousand five hundred and seventy one patients (72.3% of admissions) were screened (M:58%; age: 7.3 years/4.4). 10.1% of those screened were at high and 9.2% at medium risk of malnutrition with more girls than boys being at high or medium risk (high: F:11.9% versus M:9.1%; $P = 0.042$; medium: F:11.2% versus 7.6%; $P = 0.009$). 7.4% of the patients were thin, 9.6% obese and 6.9% had a short stature. No difference in prevalence rates were identified between TPH and DGH (Table 1) although differences were noted between specialties within TPH.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Malnutrition (%)</th>
<th>Thinness (%)</th>
<th>Obesity (%)</th>
<th>Short stature (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH</td>
<td>10.5</td>
<td>8.2</td>
<td>9.8</td>
<td>7.6</td>
</tr>
<tr>
<td>DGH</td>
<td>8.9</td>
<td>5.5</td>
<td>8.8</td>
<td>5.1</td>
</tr>
</tbody>
</table>

In TPH, thinness was greater in medical than surgical patients (10.1% versus 5.1%; $P = 0.002$) as was short stature (OR: 0.65; 95% CI: 0.4–1.1; $P = 0.084$). Thin children were younger (median, IQR: 3.9, 2.1–9.6 years) and obese children older (median, IQR: 9.4, 5.5–11.9 years) than children with normal BMI (median, IQR: 6.4, 3.2–10.7 years; $P < 0.0001$). Obesity was more likely in boys (F:8.1% versus M:10.8%; $P = 0.080$) and girls were more likely to have short stature (F:8.6% versus M:5.7%; $P = 0.034$). Children with short stature were significantly older than children with normal height (median, IQR: short: 8.7, 2.9–13.7 years versus normal: 7, 3.2–10.6 years; $P = 0.006$). No differences were noted between social classes.

Prevalence of malnutrition in children is similar in DGH and TPH. Obesity in paediatric inpatients is similar to the general population2 and no social inequalities were observed. More than 25% of the patients at high risk of malnutrition had a normal BMI, which highlights the importance of a malnutrition screening tool rather than the use of anthropometric measurements alone to assess malnutrition.