Multidisciplinary care management has a positive effect on paediatric obesity and social and individual factors are associated with better outcomes

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In southwest France, a regional health network for the prevention and care management of paediatric obesity and overweight - RePPop Aquitaine - was set up in 2006. RePPop offers individualised and multidisciplinary healthcare management for a maximum duration of two years based on the severity of the initial weight problem and the overall situation of the child and his or her family. The care management is initiated by the attending physician, generally the family’s general practitioner or paediatrician, who decides if any referrals are needed to dieticians, psychologists or physical activity professionals, with the fees for these services being paid by RePPop. Patients could also participate in group therapy sessions, appropriate physical activity group sessions or spend short stays in a specific in-patient unit for less than two months.

OBJECTIVES

- To assess the impact of the paediatric obesity care management proposed by RePPop Aquitaine, with regard to the change in the child’s degree of obesity between the initiation of treatment and the end of care management
- To investigate factors associated with a better outcome at the end of care management

METHODS

The data collected from the baseline consultation and from the last available medical consultation were: anthropometric data, academic difficulties, degree of obesity, eating habits and sedentary and physical activities. These data were collected thanks to a digital medical file filled in by the referring physician after each consultation. The medical file was filled in by the same referring physician at all stages of the care management. Moreover, the length of medical follow up was defined as the time that had elapsed, in months, between the baseline and the last available medical consultations.

Statistical analysis

Associations between initial characteristics and outcomes at the end of care management were assessed using the Student t test and chi-square test, ANOVA and Pearson’s correlation coefficient at the univariate stage. The variables that were significant at the univariate stage at p<0.20, and with less than 15% of missing data, were then entered into a multivariate linear regression analysis using the same dependent variables. Multivariate analyses were used to examine the independent interaction between the initial characteristics of the children and outcomes at the end of care management. The two main analyses, one with outcomes equal to absolute ΔBMI Z score and one with outcomes equal to relative ΔBMI Z score, were performed as two independent analyses. For each of the variables not considered in the main selection procedure, owing to more than 15% of missing data, a complementary multivariate analysis was conducted on a sub-group of children without missing data in order to confirm their association with outcomes. A p value of <0.05 was considered as statistically significant. Statistical analyses were performed using the SAS version 9.3 software (SAS Institute Inc., Cary, North Carolina, USA).

RESULTS

Multidisciplinary care management has positive effect on paediatric obesity

At the end of care management, 75.5% of subjects had decreased their BMI Z score. A decrease of the BMI Z score was observed:

- the absolute ΔBMI Z score was -0.36 ±0.60 Kg/m² and the relative ΔBMI Z score was -11±118%

Social and individual factors associated with better outcomes...

At the multivariate stage, associations with successful outcomes at the end of care management according to the absolute ΔBMI Z score were: age at baseline between five and 15 years, sport in club and length of follow up of longer than 10 months.

- according to Absolute Δ BMI Z score

Table 1: Characteristics associated with better outcomes at end of care management according to Absolute ΔBMI Zscore - Multiple linear regression - (N=975).

<table>
<thead>
<tr>
<th>Variables</th>
<th>OR</th>
<th>95% IC</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low parental socio economic status</td>
<td>0.03</td>
<td>-0.055-0.122</td>
<td>0.453</td>
</tr>
<tr>
<td>Age at baseline (between 5 and 15 y. old)</td>
<td>-0.011</td>
<td>-0.023-0.001</td>
<td>0.050</td>
</tr>
<tr>
<td>Length of follow-up in RePPop (more than 10 months)</td>
<td>-0.008</td>
<td>-0.012-0.003</td>
<td>0.0004</td>
</tr>
<tr>
<td>Sport in club (yes)</td>
<td>-0.14</td>
<td>-0.218-0.068</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

- according to Relative Δ BMI Z score

At the multivariate stage, associations with better outcomes according to relative ΔBMI Z score were: age at baseline between five and 15 years, practicing sport in club, length of follow up of longer than 10 months, having no academic difficulties and having no overweight or obese parents.

Table 2: Characteristics associated with better outcomes at end of care management according to Relative ΔBMI Z score - Multiple linear regression - (N=850).

<table>
<thead>
<tr>
<th>Variables</th>
<th>OR</th>
<th>95% IC</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic difficulties (yes)</td>
<td>0.035</td>
<td>0.005-0.065</td>
<td>0.024</td>
</tr>
<tr>
<td>Low parental socio economic status</td>
<td>0.019</td>
<td>-0.01-0.048</td>
<td>0.21</td>
</tr>
<tr>
<td>Age at baseline (between 5 and 15 y. old)</td>
<td>-0.008</td>
<td>-0.012-0.004</td>
<td>0.0001</td>
</tr>
<tr>
<td>Length of follow-up in RePPop (more than 10 months)</td>
<td>-0.003</td>
<td>-0.004-0.001</td>
<td>0.0003</td>
</tr>
<tr>
<td>Overweight or obese parents</td>
<td>0.018</td>
<td>0.001-0.034</td>
<td>0.032</td>
</tr>
<tr>
<td>Sport in club (yes)</td>
<td>-0.038</td>
<td>-0.064-0.013</td>
<td>0.0031</td>
</tr>
</tbody>
</table>

A complementary multivariate models among sub-groups of children without missing data showed that age at onset of overweight was significantly associated with better outcomes according to the relative ΔBMI Z score (p=0.02), while age at adiposity rebound tended to be associated with better outcomes, but not significantly (p=0.06).

Conclusion

The multidisciplinary care management provided by RePPop Aquitaine resulted in a significant positive effect on paediatric obesity. This study confirms that several social and individual factors affect the efficiency of obesity care management and also highlights the importance of organising care within the family and the health professional community.

References


Conflicts of interest

The authors declare that they have no conflict of interest.

Publication in progress


Poster presented at: