Does illness experience influence the recall of medical information?

B Krishnan, C Glazebrook, A Smyth

Abstract
Recall of a storyboard description of an unfamiliar illness was assessed in 66 healthy children and 40 children with chronic illness (cystic fibrosis or asthma). A significant interaction between verbal intelligence quotient and illness experience (p < 0.001) suggested that more able sick children may be resistant to learning new medical information.

Methods
Forty children with a chronic illness (15 with cystic fibrosis and 25 with chronic asthma) were recruited from specialist paediatric outpatient clinics. An age stratified, random sample of 66 children with no chronic health problems was recruited from one primary school, in a socially mixed catchment area. Demographic information was obtained from parents in the clinic, or by post for the comparison group, and parents were asked to rate their child's experience of illness on a five point scale.

In the testing session, each child was given an attractive storyboard explanation of iron deficiency anaemia. A train analogy was used to explain the function of the blood in carrying oxygen "workers" from the lung "station" to the rest of the body. The workers need seats on the train which are made by iron from food. Not enough iron means not enough seats so not enough oxygen workers travelling on the train (fig 1).

Analysis of variance was done with illness experience (healthy v chronic illness), verbal IQ (above or equal to the median v below the median), and sex as the independent factors and total anaemia knowledge score (log transformed) as the dependent variable. Age of child was entered as a covariate.

Results
The mean (SD) age of children in the study group was 7.6 (2.26) years and in the comparison group 8.0 (2.05) years. The study group contained 24 (60%) boys and the comparison group 32 (49%). The study and comparison groups did not differ significantly in age, sex, social class, verbal IQ or conversation ability.

**Figure 1**  Storyboard explanation of iron deficiency in anaemia.
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Table 1  Total anaemia knowledge scores (log transformed and adjusted for age) in healthy children and children with a chronic illness

<table>
<thead>
<tr>
<th>Group</th>
<th>Healthy group</th>
<th>Chronic illness group</th>
<th>Mean (SE) difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower IQ</td>
<td>0.62 (0.31)</td>
<td>0.57 (0.3)</td>
<td>0.046 (0.086)</td>
</tr>
<tr>
<td>(n = 27)</td>
<td>(n = 24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher IQ</td>
<td>0.79 (0.37)</td>
<td>0.37 (0.38)</td>
<td>0.423 (0.097)</td>
</tr>
<tr>
<td>(n = 39)</td>
<td>(n = 16)*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.001.

Discussion

This study found that children with a chronic illness and higher verbal IQ understood and retained significantly less of a simple explanation of an unfamiliar illness than healthy children with similar verbal IQ. This finding will be surprising to many clinicians. However, there is little research evidence to support the commonly held assumption that children with chronic illness will learn new medical information more readily. Most work to date has concentrated on the relation between illness experience and the sophistication of children’s illness concepts, and has produced conflicting results. Few studies have examined the retention of new medical information.

One possible source of error in our study is the lack of a previously validated test to evaluate children’s ability to learn new medical information. The tool we have developed, however, appeared to perform as a good test of knowledge. Inter-rater reliability was high and scores correlated with age and, in the control group, with verbal IQ.

There are various possible explanations for our findings. Children with higher verbal IQ may be better able to grasp the implications of their illness and their low scores may reflect an attempt to reduce anxiety by blocking out new information about illness. Alternatively, they may be attempting to disassociate themselves from illness issues. It is possible, however, that they are bored by overexposure to medical information or simply resent the use of the train analogy. To determine whether the effect is specific to analogous explanations we are currently comparing the effectiveness of analogous and non-analogous explanations of medical information.

Children in the study group had either cystic fibrosis or asthma, both of which require adherence to a daily treatment regimen that may include oral or inhaled medication and, in cystic fibrosis, chest physiotherapy. Poor understanding of illness is associated with poor compliance with regular medication. These results suggest that paediatricians must avoid overestimating their patients’ receptiveness to medical information.

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