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Healthy Heroes: Improving Young Children's Lifestyles In Lancashire; an evaluation of a challenge based schools' programme

Healthy Heroes was developed by the Healthy Schools Team in Lancashire in 2009 - 2010. Local funding sources were enhanced by a grant from the National Healthy Schools Programme funded by the Beacon Healthy Schools Peer Parenting Support Programme in England from 2008 to 2010. Programme evaluation was extended using Beacon funds.

This article provides a background to the project and describes an evaluation of the programme.

Literature review

Steeply rising trends in the prevalence of obesity in children in England and Wales have been widely documented (Jotangai et al, 2005). The Department of Health has set out a strategy to reduce the proportion of overweight and obese children (under 11 years) to 2000 levels by 2020 (DoH, 2008). The belief that children currently eat too much and exercise too little is widespread. The BMA has identified fizzy drinks, sugar and chocolate as three elements in the diet of children aged 7 - 10 which need to be reduced (British Medical Association, 2005). Eisenmann (2006) found that consumption of fast foods, soft drinks/energy dense foods, reduced consumption of milk and an increase in snacking were contributory factors in increases in obesity. Mackett and Paskins (2008) found that children were walking to school and playing outside less.

Multi-component interventions aiming to increase physical activity levels and improve children's eating behaviours and diet have been widely recommended (NICE, 2006; Harris et al, 2009). The national MEND (Mind, Exercise, Nutrition… Do it!:) programme has also encouraged child-focussed and intensive multidisciplinary programmes, and has strongly promoted parental involvement (Swain, 2009). MEND programmes were found to improve the psychological wellbeing of obese children, a trend reinforced by the findings of Fraser et al (2010). Although public awareness of the importance of a healthy diet and physical activity is increasing (MRC Human Nutrition Research, 2007), rising trends in childhood obesity are proving stubbornly resistant to change, particularly in low income households.

Family environment is known to exert a major impact on children's food preferences and lifestyles (Muller et al, 2005). Schools play a key role in the provision of physical activity opportunities (Storey, cited in Kahan, 2008). Schools provide a natural setting for education about healthy food choices (Foster et al, 2008). Warren et al's (2008) study focussing on obesity in 5 - 7 year old children in Oxford evidenced a significant improvement in nutrition knowledge, and an increase in fruit and vegetable consumption in all children; but no significant changes in rates of overweight and obese children were seen. Blom-Hoffman et al (2008) found that school based programmes were enhanced by time efficient and enjoyable home based activities. Cartoon models have been shown to be effective with children (Woolner, 2000).

Brown and Summerbell's review (2009) recommended a combination of diet and physical activity as the most effective strategies in preventing school age children becoming overweight.

The prevalence of obesity in children under 11 years in North West England follows the main national trends, with levels of obesity in the reception year of about 10% (national prevalence figure, 9.6%), and increased levels

(18.9% for boys and 15.6% for girls) in year 6, compared with a national figure of 18.3%.

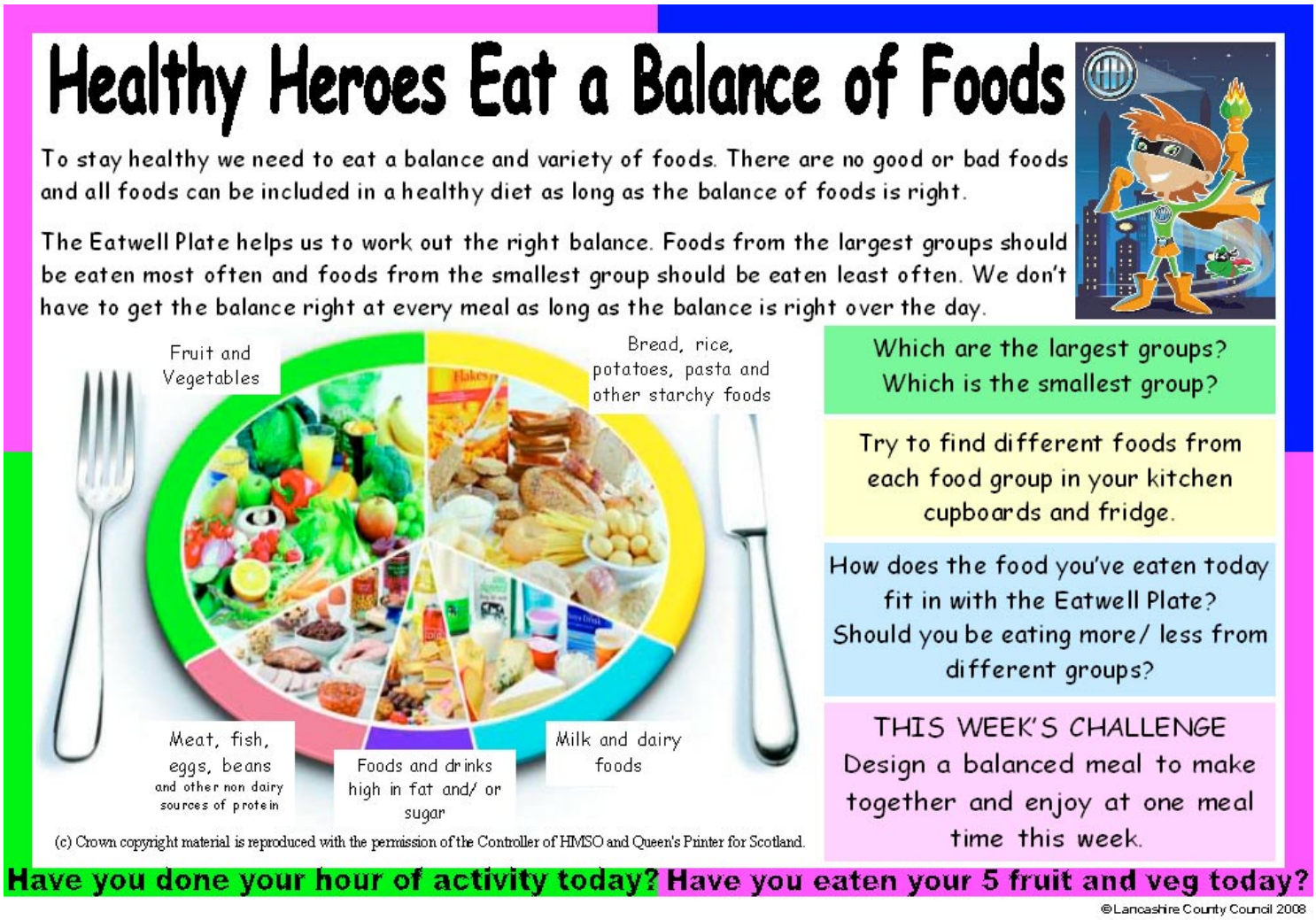
Healthy Heroes

Healthy Heroes was developed by the Healthy Schools Team in Lancashire and aims to raise awareness of healthy eating and physical activity messages by children and their families in a fun and interactive way. Children choose from a range of colourful challenge cards, such as 'A Balanced Diet', introduced by cartoon characters who reinforce key messages (See below: 'Healthy Heroes Eat a Balance of Foods'). Children have to complete up to 10 challenges at home per term, with involvement from parents and siblings. Incentives include stickers for each challenge, and Healthy Heroes capes and masks and completion certificates. At the end, the family are awarded Pledge Certificates to encourage the continuation of at least one healthy eating and one physical activity challenge. Resources are available on-line (see http://www.lhsp.org.uk/healthyheroes). The programme does not claim to solve all child obesity issues, but rather tries to capture the imagination of children and families, and engage them in thinking about developing healthier lifestyles. The programme has been commended by the National Support Team for Childhood Obesity, and received the North West Excellence in Innovation Award in 2011.

Methodology

The aims of the project's internal evaluation were developed iteratively over time, as funding became available. The Healthy Schools Team initially commissioned two Master's level students from local universities to conduct different parts of an internal evaluation (see (i) and (ii) below). Following the appointment of the authors as independent external evaluators, the Team also facilitated further qualitative research (see (iii) below), and asked the authors to synthesise all the relevant data available. The project adopted a range of methods to assess impact:

i) A parent/carer questionnaire was administered at the start and end of the programme. In the first part of the questionnaire, views were sought on changes observed in children, including uptake of school lunches, children walking to school, and



consumption of sugary snacks and drinks between meals. The second part of the questionnaire included 4 questions about children's physical activity and 6 about dietary habits. Parents' written comments on programme impact were obtained and analysed. Data were obtained for the summer and autumn terms 2009 from 26 schools, and a statistical analysis was carried out by a Master's level student.

ii) A teachers' evaluation questionnaire was developed by another Master's level student, analysing the process of implementing the scheme in 12 schools. Both parent /carer and Teachers' questionnaires were piloted and validated for reliability prior to implementation.

iii) One of the external evaluators met 25 parents in three schools where Healthy Heroes had been introduced towards the end of the summer term in 2009 during which the programme was run. These semi-structured interviews were audio recorded, transcribed and analysed.

Data sets obtained overlapped. These are summarised in Table 1 below.

Table 1: Overlapping data sets

Instrument	Parents' questionnaire	Parents' semi-structured interviews	Teachers' Survey
Number of schools involved	26	3 out of the 26	12 out of the 26
Number of participants	138 parents completed start and end of programme questionnaires. 374 parents completed end of programme questionnaires.	25 parents were interviewed	Survey reviewed progress of 552 children in the 12 schools

The project promoted distribution and collection of evaluation data. Schools encouraged parents/carers to complete questionnaires, but response rates varied. A limitation of this methodology has been that the data collected has not been amenable to analysis by children's gender and ethnicity, or by their health or Body Mass Index (BMI). Survey questions offered parents /carers only a dichotomous choice between 'yes' and 'no', when they may have needed a wider range of choices to clearly express their views (Bateman et al., 2009). However, almost 50% of parents/carers contributed further comments.

Findings

Parents' Survey: Part 1

During the summer and autumn terms 2009, 374 parents/carers from 26 schools in 'County' completed end of programme questionnaires. Results from the survey are in Table 2 below.

Table 2: Surveys of parents' / carers' views: Summer and autumn terms 2009 combined

Question	Total 374 questionnaires		
	Yes responses (%)	No responses (%)	Missing data
Q1: Did your family enjoy 'Healthy Heroes'?	365 (97.5%)	6 (2%)	3 (1%)
Q2: Did Healthy Heroes encourage your family to spend more fun time together?	301 (80%)	62 (17%)	11 (3%)
Q3: Has Healthy Heroes encouraged your child to have a school lunch?	116 (31%)	225 (60%)	33 (9%)
Q4: Has Healthy Heroes encouraged your child to walk to school more often?	169 (45%)	176 (47%)	31 (8%)
Q5: Has Healthy Heroes encouraged your family to have less sugary snacks and drinks?	276 (74%)	79 (21%)	19 (5%)
Q6: Did Healthy Heroes encourage you to make other changes?	232 (62%)	113 (30%)	29 (8%)

The 374 children comprised 183 girls and 184 boys (missing data = 7). Their mean age was 7 years. One hundred and eighty (180) parents/carers, whose children were aged from 5 to 11, included comments in their questionnaires. Most of their children (n = 130) were aged 6, 7 or 8.

Nearly all the respondents said that they had enjoyed Healthy Heroes. Four-fifths of respondents said that they had been encouraged to spend more 'fun' time together.

Just over 30% of parents/carers reported that their children had been encouraged by Healthy Heroes to have a school lunch. (Some already had one, or had a healthy packed lunch, or

considered school lunches too expensive). Over 40% said that children had been encouraged to walk to school by 'Healthy Heroes', although this was not practical for other parents due to their working hours, the distance to school, or because younger siblings were unable to walk.

A key finding was that almost three-quarters of the parents/carers (276 of 374, 74%) reported that their children's level of sugar consumption had reduced. While it is possible that this indication of children changing their behaviour is overstated, parents/carers' answers clearly ascribed this change to children taking part in Healthy Heroes.

"When someone else rather than 'Mum' tells them 'no sugary drinks', they take more notice". (Mother of girl, age not known)

"(Name of son) has encouraged all the family to eat more fruit instead of sugary snacks, and to drink plenty of water". (Parent of 6 year old boy).

"We have always tried to limit sugary snacks and drinks but (Healthy Heroes) gave (name of daughter) a greater understanding of why". (Parent of 8 year old girl).

These quotations indicate the value of schools reinforcing parental advice, and the potential for even young children to influence the behaviour of other family members.

Three-fifths of parents described a range of lifestyle improvements for their family. Many parents/carers reported that children had improved their diet, drunk more water, exercised and cooked more often, and taken better care of their teeth.

One mother of a 7 year old girl commented:

"We as parents have lost over 4 stone between us … (Healthy Heroes) certainly made a difference to our family".

Parents' Survey: Part 2

This part of the evaluation provided some statistical confirmation regarding programme impact.

Both pre and post questionnaires, recording parents' views about children's healthy eating and physical activity levels, were completed by 138 parents, 39% of the total. Positive responses to the 10 questions were scored at 10; 'sometimes' responses were scored at 5; and negative responses scored 0. The score range was 0-100. Statistical analysis found a significant improvement in mean scores at the end of the programme (mean = 7.06; Std Dev = 9.94; p = 0.05). Mean percentage pre scores were 72.21; and post scores 79.27 (mean difference 7.06) for the 138 respondents.

Further analysis was undertaken for score changes in response to the (6) healthy eating and (4) physical activity questions. Results are in Table 3 below.

Table 3: Baseline and end of programme scores for *healthy eating* and *physical activity* questions.

	Baseline mean score	Standard deviation	End of programme mean score	Standard deviation	Difference between baseline and end of programme
Healthy eating	69.32%	15.04	77.84%	13.64	8.51%
Physical activity	76.63%	16.25	81.43%	13.86	4.80%

Percentage differences between pre- and post-scores for healthy eating and physical activity are summarised in Table 4 below.

Table 4: Percentage differences between pre and post healthy eating and physical activity scores

	Improved score	Same scores	Decreased Scores	Overall Improvement	Significance Level
Healthy eating	59%	28%	13%	8.5%	p <0.001
Physical activity	43%	38%	19%	4.8%	p <0.001

Tables 3 and 4 indicate that while healthy eating and physical activity scores both improved, the level of improvement appeared higher for healthy eating. The difference between baseline and end of programme mean scores for healthy eating (increase 8.51%) and physical activity (increase 4.80%) was statistically significant (n = 138; $p < 0.05$). Mean baseline scores were higher for physical activity (76.6) than for healthy eating (69.3) which may mean that there was less scope for improvement in physical activity levels. Nonetheless, this finding suggests that Healthy Heroes may have had more impact on healthy eating than on physical activity levels.

Teachers' survey

One school from each of 12 districts in Lancashire was selected to use the teachers' questionnaire during the summer term 2009. The 12 lead teachers were all white British. The 12 schools had widely variable deprivation characteristics, including very deprived and comparatively affluent areas. School size varied from 76 pupils to 556. Class sizes ranged from 11 to 34 children. Within the 12 schools, 552 children were involved in Healthy Heroes (277 girls and 275 boys). 416 were white British and 130 were Pakistani. 458 (83%) completed the Healthy Heroes activity. Neither school nor class size, nor the amount of time spent on Healthy Heroes, appeared to influence the number of children completing the programme. For example two of the schools where 100% of children completed their tasks spent less than half an hour on this each week; and one of them with the lowest completion rate (52%) allocated more than an hour each week.

Teachers reported very positively on the use of activity cards such as 'Get Active as a Family' and 'Drink water'. Healthy eating and physical activity cards proved equally popular. The teachers rated the Healthy Heroes resources, including the Teachers' guide, very positively. Teachers considered that role modelling, using Healthy Heroes characters, contributed to the programme's effectiveness. Incentives seemed to work well. One of the teachers commented:

"Children got very excited because the reward for completing tasks was extra playtime; they would run around the playground being Healthy Heroes".

Sending material home also seemed productive. Parental involvement was crucial; some teachers wanted to invite parents into school to prepare them for the programme in future. There was some evidence of a lower return rate for activity cards for boys. Materials promoting reduced salt intake appeared to conflict with Asian cultural cuisine, which emphasises the necessity of salt.

Parents' interviews (25 interviews at three Primary Schools)

Nineteen mothers and six fathers whose children had been involved were interviewed towards the end of the summer term in which the programme was run. The parents were from three schools, two in relatively deprived areas, and one in a more prosperous district. No differences in parents' views were noted linked to relative deprivation levels. The tone of parents' comments, in response to the interviewer's exploratory and probing questions, is more nuanced, reflective and critical than parents' written and mainly enthusiastic comments from questionnaires.

Parents at school B (N=8) emphasised how much both they and their children had enjoyed participating in the programme. They had found the activities straightforward and easy to engage with. Parents at school C emphasised that Healthy Heroes has been 'embraced enthusiastically' by their children, to the extent of …. "giving parents grief about their own unhealthy lifestyles and causing them to change their behaviours". Parents also recognised that if they did not prioritise Healthy Heroes, or if they themselves were resistant to new ideas about food choice, this would reduce the impact of what the children had learnt. Parents welcomed being able to access all the challenges and activity cards online.

How far parents became engaged could depend on their other priorities. They referred to illness, minor surgery, dependant grandparents, lone parenthood and busy weekends as examples of why challenges had not been responded to as well as they would have wished.

Parents at school C (N=12) recognised their responsibilities and the significance of the example they set. One commented…. "Some parents don't help, do they?... it's not always the kids' fault, because they don't choose their own diets….. (and) they don't buy their own food". Parents' work commitments and habits could prevent children getting more physical exercise.

"In the winter you just get in and turn the telly on and that's it" .

Another parent said that her daughter …."doesn't really get out, but that's my fault because I am studying at the moment so my weekends are taken up at the computer".

Parents appreciated that children liked to see them involved. Their comments included:

... "Kids like it when you join in yourself…. You have to go on a bike or walk with them. They really like …. doing things together as a family".

... "I think (child's name)'s intrigued that …. I am going to have to play this hopscotch with her as well. She is interested in me getting more exercise".

Parents at school C (N=12) were also aware that Healthy Heroes competed with other school priorities, for example SATs tests, OFSTED inspections or drama productions. They suggested some new challenges, for example encouraging children to question how unhealthy lifestyle choices were promoted by advertisers, the media, and the layout of supermarkets, and by allowing unhealthy foods to be sold more cheaply than healthier ones, (for example "buy one get one free" offers).

Some of these parents considered that the Healthy Heroes challenges were likely to have most impact in households where issues were already relatively well understood, and also questioned how long-lasting the changes in children's behaviour would prove to be. Parents at school A (N=5) saw Healthy Heroes materials as more appropriate for younger children. They saw value in the messages being spread out throughout a child's primary school career. One mother commented that, in contrast to her 11 year old, her 6 year old would believe and do anything that her teachers told her.

Discussion

Healthy Heroes seems to have been successful at several levels. Children cooperated well with undertaking challenges and involving their families. Parents completed much of the required evaluation data. Schools provided the infrastructure to run the challenges, and gave up classroom time to deliver the Programme, which teachers rated highly. Teachers and parents reported that Healthy Heroes captured children's imagination. The programme encouraged positive alliances between schools and families. Nearly all families who responded enjoyed taking part.

Much of the data gives rise to optimism about the potential of Healthy Heroes for changing families' behaviour. Four-fifths of families who responded believed this to be the case, and many provided examples of changes in diet and activity levels. Children's reported reduced consumption of sugary drinks and snacks has considerable potential for improving their general and oral health. More limited behaviour changes in the take up of school lunches and in children being encouraged to walk to school were also noted.

Statistical evidence suggested that Healthy Heroes may have impacted rather more on children's nutrition and diet than on physical activity levels. The role of schools is likely to be a key determinant here. Information about healthy eating, including "5 a day", is readily communicable to children from an early age. School lunches and school lunch times provide opportunities for messages about healthy eating to be reinforced. By contrast, the demands of the national curriculum have squeezed the amount of time available at school for physical exercise and organised sports, and access to playing fields has reduced across the country. Intuitively, it seems unsurprising that programme impact on increasing physical activity levels may have been somewhat lower than success achieved in improving knowledge about and changing behaviour related to healthy eating.

Qualitative data reflected the views of some families who had already adopted healthy lifestyles. For some of these families Healthy Heroes seemed to provide additional encouragement to consolidate well established fitness and healthy eating regimes. The impact of Healthy Heroes would be likely to wear off unless children received positive encouragement from school or home.

Parents' responses reflect the reality that in crowded and busy lives promotion of children's healthy lifestyles has to compete with other work and family priorities. Parents acknowledged that their own lifestyle had a key influence, for better or worse, on children changing their behaviour. Many suggested that the chances of improving children's behaviour were strongly reinforced by encouragement and direction from school. They also reported that children were pleased when they joined in, and that children could exert pressure on parents to change their behaviour.

Healthy Heroes probably worked best with schools and parents who were already positively motivated to promoting and adopting healthy lifestyles ("working with the willing"). Other schools were less enthusiastic and found it harder to find time to implement the programme; and achieving significant change was no doubt more challenging for children and families facing economic hardship.

Making a positive impact on children's healthy lifestyles is up hill work. The evidence that Healthy Heroes has made a valuable contribution is encouraging, but not incontrovertible.

The Lancashire Healthy Schools Team demonstrated impressive strategic commitment to improving children's lifestyles through developing the Healthy Heroes Programme, with strong leadership from the healthy schools partnership, alliances with schools, and a clear vision about how to capture children's imagination and involve families. There has already been much interest in both the principles and the implementation of the programme from other authorities. Programmes like Healthy Heroes have the potential to play a key role in improving children's lifestyles and in shaping investments in their healthy futures.

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