The HeartSmart™ Family Fun Pack: An Evaluation of Family-based Intervention for Cardiovascular Risk Reduction in Children

Susanne Cookson, rct1, Alison Heath,2 Liliann Bertrand3

Over the past two decades, increasing attention has been paid to cardiovascular risk factors and/or their precursors among children.1–13 Studies have been conducted in the United States,4 the United Kingdom,5,6 Japan,7 Finland,8 Taiwan9 and Australia.10 Intervention programs have been school-based,11–13 through physicians/pediatricians14,15 or family-based.16–18

In 1998, the Heart and Stroke Foundation released its Heart and Stroke Foundation Report Card on the Health of Canadian Children.19 Results from the survey indicated that a large proportion of Canadian children have poor diets and only two thirds regularly engage in active play. At the same time, the Heart and Stroke Foundation released its HeartSmart™ Family Fun Pack, a user-friendly, practical resource for families with children between the ages of 6–12 years. Produced in cooperation with Health Canada and supported through an educational grant from the TD Bank Financial Group, the Family Fun Pack contained games, posters, a children’s health quiz, brochures and a growth chart. All elements emphasized one or more of the following key themes: eat heart healthy; active play. At the same time, the Heart and Stroke Foundation conducted a major media campaign (February 1998), there were 1,643 requests for the HeartSmart™ Family Fun Pack. Of these, 1,387 (84%) agreed to complete a short (10-minute) questionnaire and to participate (if called) in a follow-up call. This group (n=1,387) constitutes the pre-test sample.

At the time of the pre-test, respondents were asked to answer the following questions regarding a specific child in their family (identified by year of birth). Questions included:

- Whether or not the parent was concerned about the child’s weight, level of physical activity or exposure to tobacco smoke;
- Frequency of active play and exposure to second-hand smoke;
- How child’s weight compares to others the same age;
- When (if ever) the family intends to make lifestyle changes.

 solution to change was used as a proxy to estimate stage of change in the following manner:

- Not planning any lifestyle change = pre-contemplation stage;
HEARTSMART™ FAMILY FUN PACK EVALUATION

**TABLE I**
When Changes to Family Lifestyle are Planned (Stage of Change)

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test</th>
<th>Post-Test*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Planning Any Lifestyle Change (Precontemplation)</td>
<td>402 (29%)</td>
<td>60 (20%)</td>
</tr>
<tr>
<td>Planning a Change Within Next 30 Days-6 Months (Contemplation/Preparation)</td>
<td>694 (50%)</td>
<td>93 (31%)</td>
</tr>
<tr>
<td>Made a Change Within Last 6 Months or Over 6 Months Ago (Action)</td>
<td>291 (20%)</td>
<td>144 (48%)</td>
</tr>
<tr>
<td>Totals:</td>
<td>1387 (100%)</td>
<td>297 (100%)</td>
</tr>
</tbody>
</table>

Pre-test vs. Post-test: $\chi^2 (3df) = 96.95, p<0.001$

* Missing=3

**TABLE II**
How Frequently Child is Exposed to Second-Hand Smoke

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>985 (72%)</td>
<td>177 (59%)</td>
</tr>
<tr>
<td>1-2 times per week or less</td>
<td>153 (11%)</td>
<td>75 (25%)</td>
</tr>
<tr>
<td>Once a day or more</td>
<td>222 (16%)</td>
<td>48 (16%)</td>
</tr>
<tr>
<td>Totals:</td>
<td>1360 (100%)</td>
<td>300 (100%)</td>
</tr>
</tbody>
</table>

Pre-test vs. Post-test: $\chi^2 (1df) = 40.19, p<0.001$

* Missing=27 (2%)

**TABLE III**
How Frequently Child Plays Actively

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test</th>
<th>Post-Test**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never or 1-2 times per week</td>
<td>305 (22%)</td>
<td>33 (11%)</td>
</tr>
<tr>
<td>3 or more times per week</td>
<td>680 (50%)</td>
<td>102 (34%)</td>
</tr>
<tr>
<td>Once a day or more</td>
<td>374 (28%)</td>
<td>162 (55%)</td>
</tr>
<tr>
<td>Totals:</td>
<td>1359 (100%)</td>
<td>297 (100%)</td>
</tr>
</tbody>
</table>

Pre-test vs. Post-test: $\chi^2 (1df) = 83.08, p<0.001$

Missing: *=28 (2%) **=3 (1%)

**RESULTS**

Demographics were not gathered at the time of pre-test. Among the post-test sample, 61% (184/300) were employed and 38% (114/300) were not (missing = 2/300 or 1%). It should be noted that “unemployed” was not defined and could include full-time housekeepers, students and/or retired persons. When those who described themselves as employed were asked “what type of work you do,” white collar occupations dominated (61 described themselves as clerical, 42 professional, 26 business, and 7 as being in sales; whereas 29 described themselves as being unskilled labourers and 18 as skilled).

Table I shows the distribution of families according to their stated intention to make lifestyle changes at pre-test and post-test. The proportion of families in the precontemplation stage (i.e., not planning to make any lifestyle changes) declined from 29% to 20%. The proportion in the contemplation and/or preparation stages (i.e., planning to make a lifestyle change within the next 30 days to 6 months) decreased from 50% to 31%. Those in the action stage (i.e., reporting they had made changes within the past ≥6 months) increased from 20% to 48%. The distribution of families according to their intention to change (stage of change) was significantly different pre-test vs. post-test (p<0.001).

Figure 1 shows the parental concerns pre- and post-test. At the time of the pre-test, about a third of the parents expressed concern about their child’s weight (27%), level of physical activity (31%) and exposure to tobacco smoke (35%). At post-test, the level of concern about exposure to tobacco smoke remained similar. However, the proportions concerned about weight and level of physical activity decreased significantly (for weight, pre-test was 27% and post-test was 18%, $\chi^2 (1df) = 10.45, p<0.001$; and for level of physical activity, 31% vs. 19%, $\chi^2 (1df) = 17.25, p<0.001$). The proportion of parents who were not concerned about any of the above also increased (from 40% to 49%, $\chi^2 (1df) = 8.22, p<0.01$).

Table II gives the frequency of the children’s exposure to second-hand smoke. At pre-test, 72% of the parents reported that their child was never exposed to second-hand tobacco smoke; 11% reported exposure 1-2 times a week or less; and 16% said their child was exposed once a day or more. At post-test, the proportion reporting no exposure declined to 59%, whereas those reporting exposure 1-2 times a week or more increased (from 11% to 25%). For the category “once a day or more” there was no change (16% at both pre-test and post-test).

Table III shows the frequency of active play by the children as reported by the par-
At pre-test, 20% of parents reported their child played actively 1-2 times a week; 50% reported active play 3 or more times per week; and 28% put the frequency at once a day or more. Only 28 (2%) reported no active play.

At post-test, the proportion reporting minimal levels of active play (never and 1-2 times a week) had declined (see Table III). The proportion reporting active play 3 or more times a week also declined (from 50% to 34%). However, the proportion reporting active play once a day or more increased (from 28% at pre-test to 55%).

During the post-test, parents were asked to rate the effectiveness of the HeartSmart™ Family Fun Pack on a 5-point scale, ranging from 1 (not effective) to 5 (very effective). Figure 2 shows the percentage of parents who rated the effectiveness of the Family Fun Pack as either 4 or 5 (i.e., effective or very effective). Thirty-eight percent (114/300) reported that the Family Fun Pack had helped them to improve their child’s nutrition; 28% (84/300) reported increases in the frequency of child’s active play; and 12% (36/300) reported they had reduced smoking in the household or while around their children. Perceived effectiveness varied significantly by stage of change for nutrition ($\chi^2_{2 df} = 15.0, p<0.001$) and marginally for physical activity ($\chi^2_{2 df} = 5.0, p<0.1$) but not for smoking ($\chi^2_{2 df} = 2.0, p>0.1$).

One element in the HeartSmart™ Family Fun Pack, the Children’s Health Quiz, was found to be an effective encouragement for lifestyle changes by 30% (90/300) of the parents. As with nutrition and physical activity, there was a significant trend for perceived effectiveness of the Children’s Health Quiz to vary according to the family’s intention to change ($\chi^2_{2 df} = 11.8, p<0.01$).

Thirty-two percent (96/300) of the families reported they had set up a non-smoking policy in the home because of the Family Fun Pack. Non-smoking policies were established by 30% of the smoking households (25/84) and 33% of the non-smoking households (71/216).

Satisfaction with the HeartSmart™ Family Fun Pack was high. Among the 300 post-test respondents, 73% (219/300) reported that the Family Fun Pack met their expectations, with 15% (45/300) saying that it exceeded their expectations. About a third of respondents (35%) reported they had read all of the materials in the Family Fun Pack, another third (33%) had read “most of it”, and a third (32%) “some of it.”

DISCUSSION

According to the self-reports obtained from the parents, the HeartSmart™ Family Fun Pack is effective in supporting and promoting healthy lifestyle modifications among those who have already made the commitment to change. Over two thirds (70%) of the families who requested the Family Fun Pack stated they were either planning to make lifestyle changes or had already made a change. Such families were more likely than those not planning to report change to the Family Fun Pack to
be effective in improving their child’s nutrition (44% vs. 15%) and increasing the frequency of active play (31% vs. 16%).

At the time of the pre-test, 60% of parents stated concerns about their child’s weight, level of physical activity and/or exposure to second-hand smoke. In the post-test, the proportion of concerned parents dropped to 50%, presumably due in part to the fact that families were making positive lifestyle changes. Levels of concern about the child’s weight (27% vs. 18%) and level of physical activity (31% vs. 19%) declined significantly. The frequency of reported active play increased, with the proportion of parents reporting active play once a day or more rising from 28% to 55%.

There was no change in parental level of concern about their child’s exposure to second-hand smoke (35% vs. 36%) or the proportion who estimated that their child was exposed at least once a day (16%). There was a decline, however, in the proportion reporting their child was never exposed to second-hand smoke (from 71% to 59%) and a concomitant increase in those reporting exposure two or fewer times per week (from 11% to 25%). Although these numbers could be said to show an increase in second-hand smoke exposure, a more likely explanation is that these changes reflect increased parental awareness. At the same time, the Family Fun Pack motivated 32% of the families (30% of non-smoking and 33% of smoking households) to set up a non-smoking policy in the home.

It is difficult to determine the extent to which the results from this evaluation are generalizable to a wider population. Participating families were self-selected (out of the almost 8 million families in Canada, requests during February totalled only 1,600) and tended to over-represent white-collar occupations. The reliability and validity of the parental reports and the sensitivity and specificity of the measure of stage of change are undetermined, particularly as records in the two samples (pre- and post-test) were not linked. Child’s gender was not recorded and thus its effect could not be examined. Finally, as the evaluation was conducted three months after procurement of the Family Fun Pack, long-term effectiveness is unknown.

Despite these weaknesses, the study is important in that it demonstrates how evaluation strategies can be integrated into health promotion programs in a timely and cost-effective manner. Furthermore, the evaluation suggests that – among families already committed to lifestyle change – the HeartSmart™ Family Fun Pack can, at least in the short term, support the change process.

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REFERENCES


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