Evaluation of a digital health improvement programme using tele-coaching for primary prevention

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Background
In 2018, more than 32.2 million (75.2%) of the UK population aged 16-64 years old were employed. The working population spend one-third of their adult life at work (2). UK workers have an average of 9.1 sick days each year compared to 7.3 days in Western Europe, 4.9 days in the USA and 2.2 days in the Asia-Pacific region. Sick days resulting in lost productivity costs UK employers an average of £16 billion/year (3, 4).

Workplace health promotion (WHP) encompasses health promotion and illness prevention activities that are available in the workplace. Coaching and human support has been associated with better behaviour change outcomes (5), where the health coach was a registered dietitian and employed motivational interviewing techniques. Extended contact assisted in reinforcing behavioural skills and behavioural change.

The aim of this project was to evaluate the effectiveness of the LiveSmart digital health improvement programme with tele-coaching on various lifestyle and clinical outcome measures following a 6-month pilot in the occupational setting in the UK.

How it works

1. Baseline health assessment
2. Telecoached health report
3. Personalised health coaching
4. Track your health over time

Methodology
One-hundred and three employees of a global company based in Central London were offered the opportunity to sign up for the pilot and consent was obtained during their first assessment. Each individual received a Premium LiveSmart assessment at baseline, three-months and six-months. The six-months of telephone-based health coaching commenced monthly following the baseline health assessment.

The primary outcome measure was a change in LiveSmart health score. LiveSmart’s health score considers an individual’s current nutrition, exercise, lifestyle and physical health as well as blood test results.

Secondary outcome measures included; BMI, blood pressure, nutritional intake, physical activity levels, alcohol intake, smoking habits, sleep patterns, stress levels, mood, cognitive function, fasting lipids, HbA1C%, vitamin D, omega 6,3 ratio and patient satisfaction. Outcome measures were analysed at 6 months and a p-value <0.05 was considered as statistically significant.

Results
The average age of the 103 participants was 35 years. A significant change was seen in 25 different variables, including 9 lifestyle factors and 8 blood markers (Table 1). The LiveSmart health score, significantly increased by 12.7% (p<0.001). Figure 5 shows that when adjusting for age and gender, the LiveSmart health score significantly improved by 6.22 units at 3 months (95% confidence interval (CI) 4.38 to 8.06) and by 7.73 units at 6 months (95% CI 5.75 to 9.71), from baseline (p<0.001).

Discussion
This is the first project describing an objective evaluation of workplace health promotion using a digital health programme with monthly tele-coaching to improve clinical and lifestyle related outcomes in England. The LiveSmart digital health improvement programme with monthly tele-coaching can significantly improve 25 lifestyle and clinical outcome measures including HbA1C and blood pressure. Participants report significant improvement in mental health and wellbeing and felt the employing organisation was meeting its corporate responsibility by offering the programme.

The findings of this study showed high (92%) overall adherence to remote tele-coaching over the duration of the pilot, and consistent with other findings that report good overall adherence to remote eHealth tele-monitoring programmes (6, 7), suggesting that good adherence may be one reason that helped achieve significant behaviour change in the cohort of participants.

A full implementation study which takes into account seasonality and other factors is recommended to determine cost effectiveness of workplace health promotion in the contemporary setting.

Table 1: List of 25 variables that changed significantly following 6-month LiveSmart implementation pilot

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline</th>
<th>2-months</th>
<th>6-months</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LiveSmart Health Score, median</td>
<td>55.6</td>
<td>65.0</td>
<td>62.5</td>
<td>0.000</td>
</tr>
<tr>
<td>Systolic Blood Pressure, median</td>
<td>120.0</td>
<td>120.0</td>
<td>114.0</td>
<td>0.030</td>
</tr>
<tr>
<td>Diastolic Blood Pressure, median</td>
<td>70.0</td>
<td>70.0</td>
<td>70.0</td>
<td>0.040</td>
</tr>
<tr>
<td>Total smoking a day, median</td>
<td>15.0</td>
<td>2.0</td>
<td>2.0</td>
<td>&lt;0.000</td>
</tr>
<tr>
<td>Vegetable servings a day, median</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>&lt;0.000</td>
</tr>
<tr>
<td>Big fish servings a week, median</td>
<td>1.0</td>
<td>2.0</td>
<td>2.0</td>
<td>&lt;0.000</td>
</tr>
<tr>
<td>Workplace-based health coaching</td>
<td>2.0</td>
<td>2.0</td>
<td>1.0</td>
<td>0.010</td>
</tr>
</tbody>
</table>

Figures 1-5. Example results presented in an employee dashboard following the second health assessment

Figure 5. Linear regression model showing improved LiveSmart health score. In participants after adjusting for age and gender.

The vast majority of respondents (85%) felt that the programme should be offered to all employees in the future.