Physical Activity Counseling in Children and Adolescents with Chronic Headaches

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Abstract

Background: The goal of this study was to explore the impact of physical activity counseling on the baseline activity and quality of life of children and adolescents with chronic headaches.

Hypothesis: We hypothesize that the physical activity counseling program will result in reduced headache-related disability in children and adolescents, and that encouraging increased daily activity will not increase headache symptoms.

Method: Children and adolescents experiencing chronic headaches, between the ages of 8 to 17 years, were approached through their neurologist. After baseline assessments were complete, participants were randomly assigned to either standard care or care + physical activity counseling. All participants repeated the study assessments 10 to 15 weeks after the baseline visit.

Recruitment
Eligible participants were identified by neurologists from CHEO. The doctors introduce the study to patients and families. If the family wishes to speak to a researcher, the researcher would provide details of the study and obtain a written informed consent.

Baseline Activity Measurement
All participants were asked to wear a pedometer for 7 days and record the number of steps daily. The average steps per day used was in the data analysis.

Quality of Life
Health-related quality of life was assessed with Pediatric Quality of Life Inventory. The survey consists of 4 scales that measure physical, emotional, social and school functioning in children. The Total Scale Score, which is the mean computed as the sum of all the items over the number of items answers on all 4 scales, was used for data analysis².

PedMDIDAS
PedMDIDAS questions assess the impact of headache on school performance, disability at home and social/sport function. The total score was then converted to a migraine disability grade¹ (Table 2).

Counseling Intervention
The intervention group participants had one on one meetings with a physical activity counselor. The sessions focused on physical activity goal setting, identifying barriers to physical activities and cognitive restructuring.

Data Analysis
The average daily pedometer score and were expressed as mean standard deviation. The relationships between different variables were assessed using unpaired T-test. A P-value of < 0.05 was considered statistically significant.

<table>
<thead>
<tr>
<th>PedMDIDAS Score Range</th>
<th>Disability Grade</th>
<th>Females</th>
<th>Males</th>
<th>Average Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10</td>
<td>Little to None</td>
<td>1</td>
<td>1</td>
<td>6183.50 ± 3144.50</td>
</tr>
<tr>
<td>11 to 30</td>
<td>Mild</td>
<td>8</td>
<td>3</td>
<td>7439.27 ± 2572.43</td>
</tr>
<tr>
<td>31 to 50</td>
<td>Moderate</td>
<td>4</td>
<td>2</td>
<td>5543.20 ± 3364.367</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>Severe</td>
<td>2</td>
<td>1</td>
<td>3248.67 ± 702.252</td>
</tr>
</tbody>
</table>

Table 1

Methodology

Results

Baseline activity and quality of life (Pretest)
• Significant correlation between average step count and the quality of life.
• Both females and males showed a significantly increased quality of life as their step count increases (Chart 1 & 2).

Quality of Life and PedMDIDAS Disability Grade (Pretest)
• No significant correlation between the PedsQL total score and the PedMDIDAS disability grade.
• A trend was observed such that the higher the headache disability grade, the lower the PedsQL total score, which suggests lower quality of life in children with more severe headaches (Chart 3).

Comparing Mean Difference in Test Scores (Pre vs. Posttest)
• The mean difference in study scores from PedMDIDAS, PedsQL QoL Child report and PedsQL QoL parent report were compared (Chart 5).
• Unpaired T-test showed no significant difference in the test scores in the control vs. counseling group due to small sample size (Chart 5).
• However, all the tests had shown a trend in improved test score with counseling intervention, which suggest counseling may help improve the quality of life and reduce headache disability (Chart 5).
• No significant changes in post-test scores were seen compared to the pretest scores. There was a trend that a high percentage of participants in the counseling group (75%) had higher post-test score compared to the control group (diverse changes), which suggested that counseling may improve quality of life (Chart 6 & 7).

Discussion

• Overall, children and adolescents with chronic headache are less active compared to the general population. The national average was 11,350 daily steps. In comparison, children with chronic headache in this study has an average of 6269 daily steps (Table 1).
• Improved physical activity level significantly correlates to better quality of life in children and adolescents.
• Headache disability was not significantly correlated with the participants’ step count. However, the p value was relatively close to 0.05 and a partial eta squared value of 0.180 indicate that the correlation could potentially be significant if a larger sample size was considered.
• Although the group received counseling intervention showed no significant improvement in test score, a trend was observed such that counseling reduces headache disability and improve quality of life. A larger sample size is required to observe small changes in the score.

Conclusions

• Limitations: pilot study, small sample size, not statistically significant.
• Further analysis evaluating the effect of exercise counseling will be performed once all the post-study questionnaire results are obtained.
• In the future, hopefully a larger study can be conducted and the impact of exercise counseling can be further evaluated. The ultimate goal is to look into the possibility of integrating exercise counseling into the healthcare system as an alternative approach to pharmacotherapy in the management of chronic headache in children and adolescents.

Acknowledgement

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References