Improving Pediatric Eczema Care

A quality improvement initiative to assess if a short animated video improves knowledge, confidence, and quality of life in children with atopic dermatitis

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Introduction

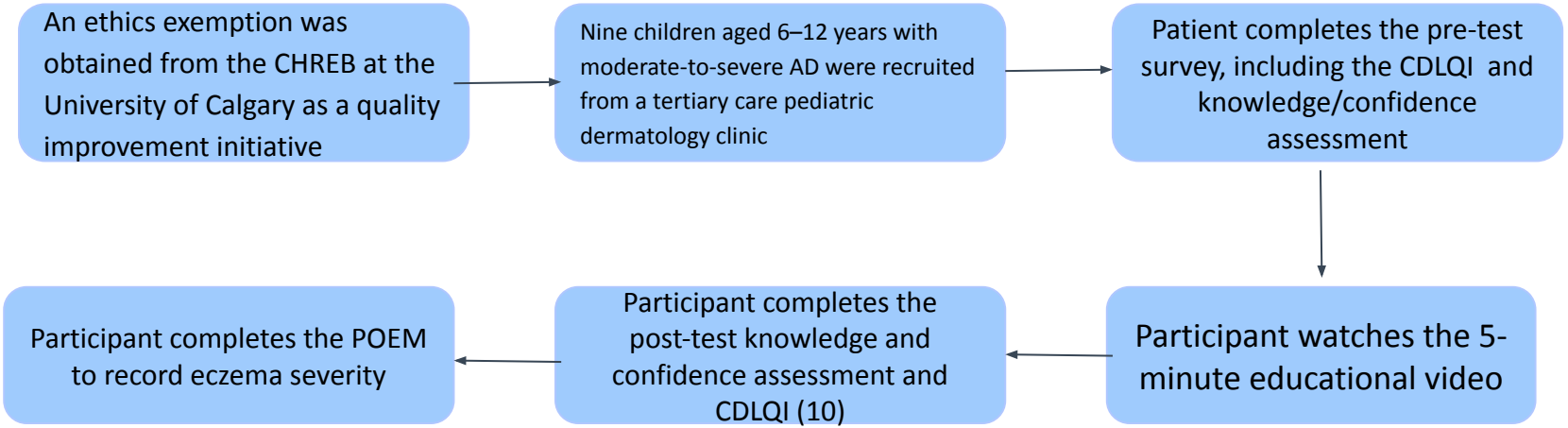
- Eczema (AD, atopic dermatitis) is an inflammatory skin condition that can significantly impact a child's quality of life. Increasing severity has been correlated with worse quality of life and quality of sleep (1-2)
- AD is estimated to affect 15.1% of children and adolescents in Canada, with approximately 38% of those children having moderate or severe eczema (3)
- There are few tools to directly educate and support children living with AD
- Most resources are caregiver and provider focused such as the Eczema Action Plan (4-7)
- We developed a 5-min animated video *Living with eczema* for children 6-12 years old to address this gap as previously described (8)

Project Overview

Objective: To determine 1) if knowledge and confidence about AD improve after watching an educational video, 2) if watching the video that addresses all components of the POEM reduces the impact of AD on quality of life.

Hypothesis: Knowledge, measured with 10 true or false questions, and confidence related to the knowledge questions, measured with a 5-point scale, will improve after watching the educational video. Quality of life impact of AD will be reduced by the video.

Methods



POEM- Patient-Oriented Eczema Measure
CDLQI- Childrens' Dermatology Life Quality Index

Knowledge was assessed with 10 true or false statements which were written to a grade 5 reading level, as determined by the Flesch-Kincaid formula (11). Confidence was assessed using a 5 point Likert scale assigned to each statement, using a similar method to Campbell et al. (12) Confidence was assessed by asking how sure they are in the answer to a given knowledge question (not sure at all, not very sure, sort of sure, very sure, completely sure).

	Correct Answer
1. Eczema is a disease that affects the skin.	True
2. Eczema can make the skin itch.	True
3. Eczema can be bad one day and good the next day.	True
4. Eczema is the same as dry skin.	False
5. A lot of children have eczema.	True
6. Eczema can pass from one child to another.	False
7. Lotion and creams with medicine can help make eczema feel better.	True
8. Doctors can help to make eczema feel better.	True
9. Eczema is just a skin problem, it can't affect a child's life.	False
10. Eczema can make the skin crack, bleed, and ooze if it is not under control.	True

Table 1. Eczema Knowledge Statements

Statistical Analysis

Statistical analyses were performed using Python version 3.11 (Python Software Foundation) within Google Colaboratory (Google LLC) with commonly used libraries including pandas, NumPy, SciPy, statsmodels and Matplotlib. Total knowledge, confidence and CDLQI scores were compared pre and post intervention using paired t-tests because the data was normally distributed. Normality was assessed using the Shapiro-Wilk test. For each individual knowledge question, the proportion of correct answers pre- and post-intervention was compared using McNemar's test.

Results

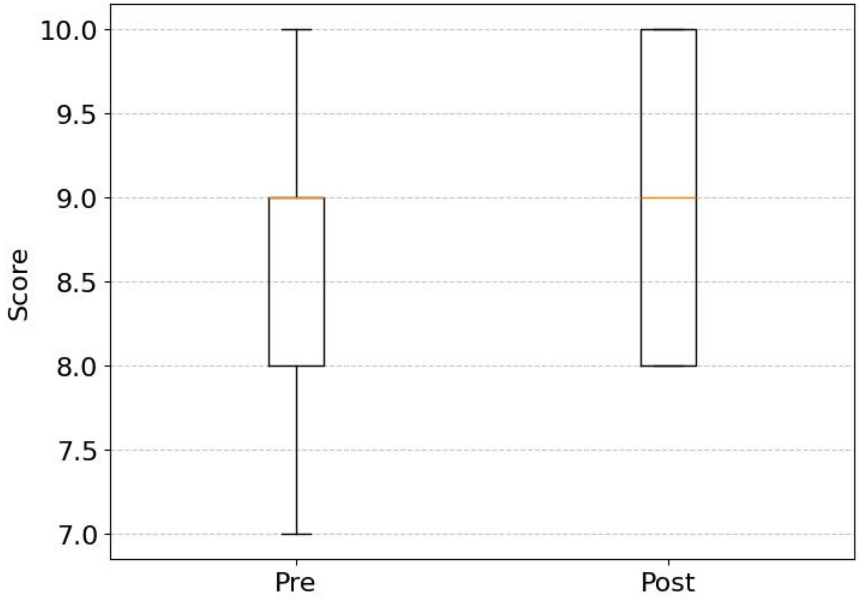


Figure 1. Knowledge scores (pre- vs post-intervention). Differences were normally distributed (Shapiro–Wilk p = 0.34). A paired one-tailed t-test showed no significant improvement (p = 0.085).

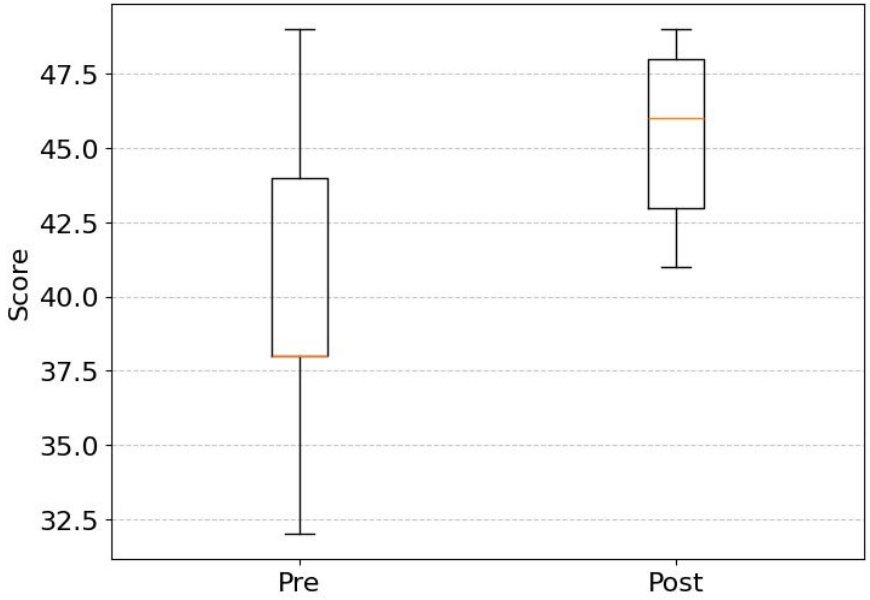


Figure 2. Confidence scores (pre- vs post-intervention). Differences were normally distributed (Shapiro–Wilk p = 0.42). A paired one-tailed t-test demonstrated a significant improvement in confidence after the intervention (p = 0.003).

Results

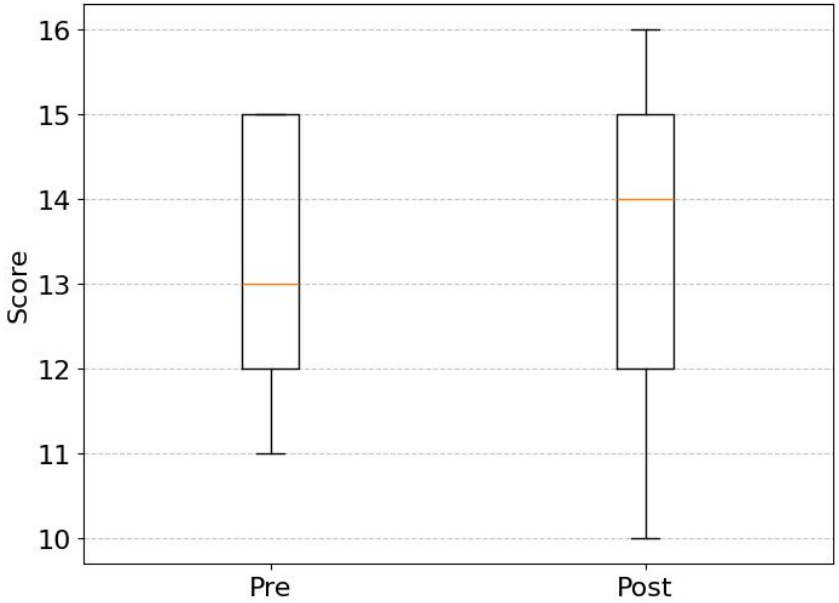


Figure 3. CDLQI scores (pre- vs post-intervention). Differences were borderline normally distributed (Shapiro–Wilk p = 0.055). A paired two-tailed t-test revealed no significant change (p = 0.681).

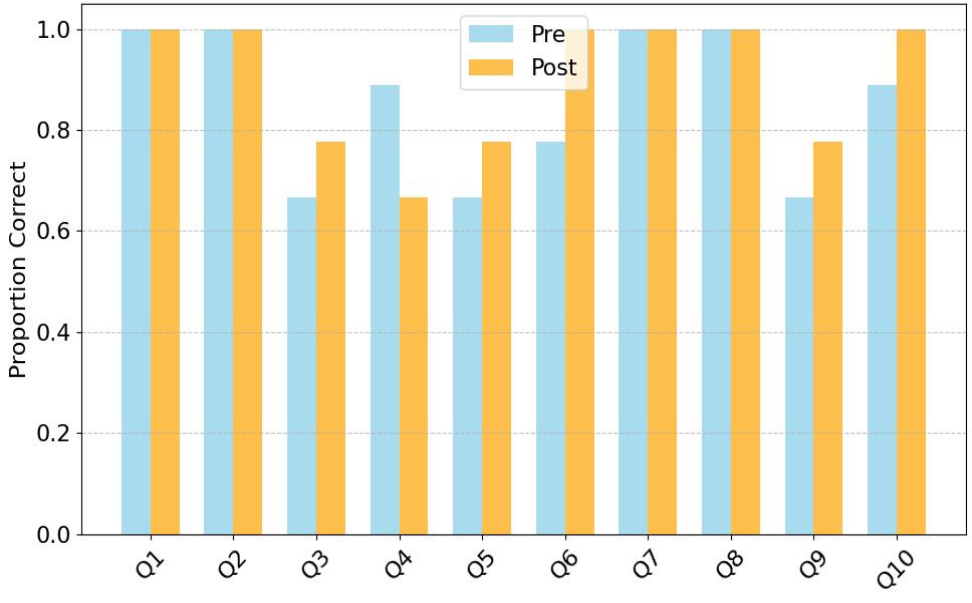


Figure 4. Question-by-question proportion of correct answers before and after the educational video. Most participants demonstrated high baseline knowledge, with small gains in several questions and no significant changes by McNemar's test (p = 0.5–1.0).

Next Steps

Baseline AD knowledge in this small sample was high. Knowledge (non-significantly) and, more importantly, confidence, (significantly) improved after watching the video.

As this is a QI study, the next step is to redesign the method based on feedback (clinic staff, patients). We have determined that the POEM should be completed at the beginning and that the questionnaires are too long for the patient population.

After the redesign, we will trial the video again in clinic with pre- and post-questionnaires to complete our QI cycle and determine the best way to integrate the video into clinic visit flow. Our video is available freely online for anyone interested.

My life with eczema

Questions or comments?
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