



Association of Quality of Life and Peak Expiratory Flow Rate with Step-down Treatment in Children with Asthma

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Background

- Asthma is one of the most common chronic diseases in childhood.



Lung function should be assessed regularly for all pts

Spirometry



Background

- Avoid spirometry, if community transmission of COVID-19 is occurring in your region
- Consider asking patients to monitor PEF at home





Background

- **We hypothesized that an electronic PEFr meter would be an objective measure for patients to recognized asthma symptoms which leads to improve asthma outcomes and patients' quality of life.**



Objectives

Primary objective

- To evaluate efficacy of routine use of peak flow mobile app :
 - Quality of life
 - Stepping down asthma treatment

Secondary objective

- Adherence to peak flow mobile application



Methods

- Children aged 7-17 years who meet the following criteria were enrolled

Inclusion criteria

- Physician diagnosed of asthma
- Receiving regular inhaled corticosteroid
- Controlled asthma in the past month
- Competent for peak flow meter usage with access to a smartphone compatible with the application



Methods

Exclusion criteria

- Diseases that affect lung function such as BPD, CF, cardiovascular diseases
- Patients or parents refuse to enrolled



Method

Children demographic data

- Age
- Sex
- Measurement; Body weight, Height, BMI
- Asthma severity
- Underlying disease
- Duration of inhaled corticosteroid use
- Episode of Asthma Exacerbation in the past year
- Education of father and mother
- Owner of smartphone
- Sensitization



Method

Visit 1

Clinic

Visit 2

Clinic

3 mo

Using peak flow twice daily, record symptom, and follow asthma action plan

Demographic data

SPT

ACT

QoL score

Peak flow mobile
app training

ACT

QoL score

Remind asthma
action plan

Satisfaction Survey



Baseline Characteristics

| Patient features | N = 66 |
|---|--------------------------|
| Age (yr), mean (IQR) | 11.6 (8.6-14.1) |
| Gender: Male (%) | 40 (60.6%) |
| BW (kg), median (IQR) | 48.5 (31.8-59.7) |
| Height (cm), mean (IQR) | 146.4 (131-159.4) |
| BMI (kg/m²), median (IQR) | 21.8 (16.8-26) |
| Comorbidity | |
| AR (%) | 66 (100) |
| ARC (%) | 7 (10.6) |
| AD (%) | 11 (16.7) |

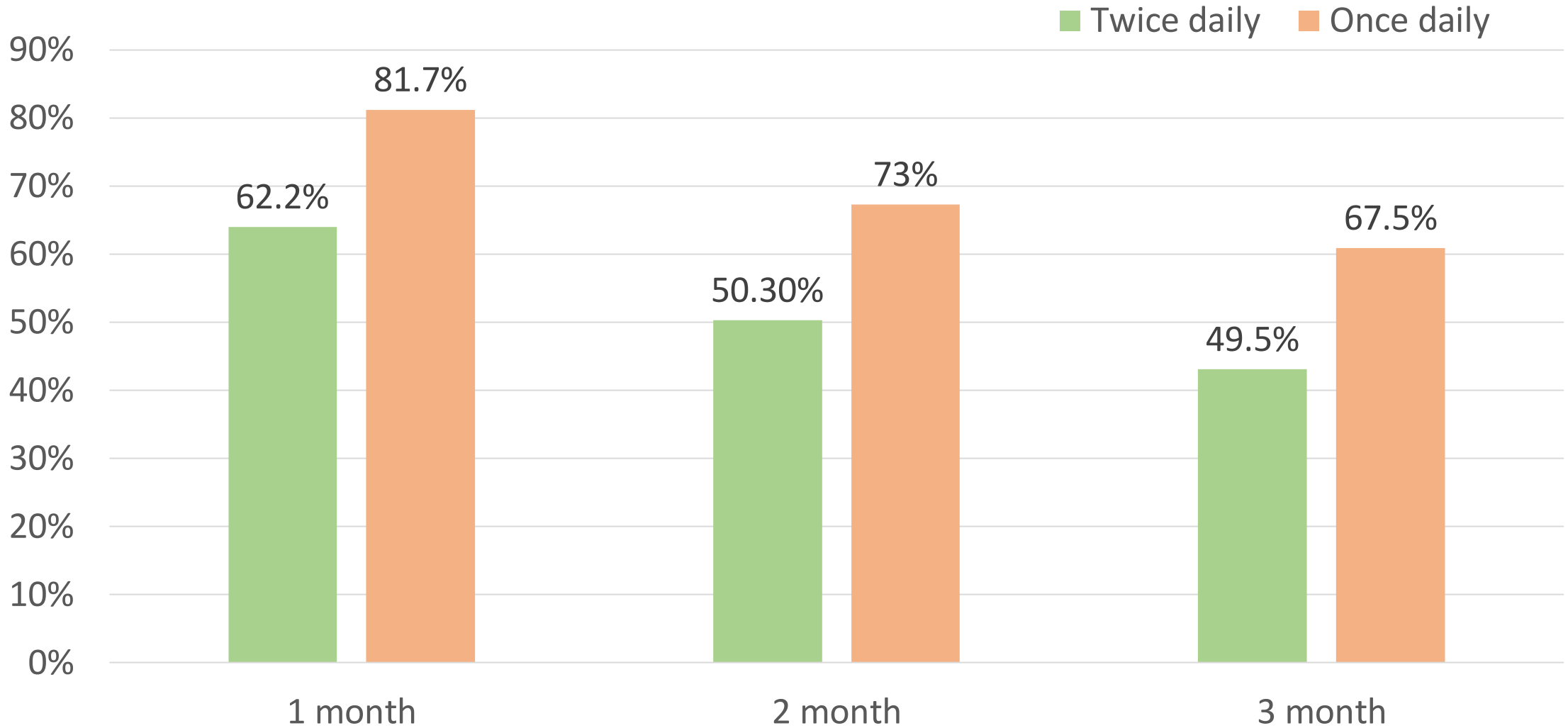


Baseline Characteristics

| Patient features | N = 66 |
|---|---------------|
| Duration of inhaled corticosteroid use (yr), median (IQR) | 5.6 (3.1-8.3) |
| Severity of asthma (%) | |
| Mild | 9 (13.6) |
| Moderate | 37 (56.1) |
| Severe | 20 (30.3) |
| Any sensitization (%) | 54 (81.8) |
| Df (Dermatophagoides farina) | 50 (75.8) |
| Dp (Dermatophagoides pteronyssinus) | 49 (74.2) |
| Cat | 15 (22.7) |
| Cockroach | 17 (25.8) |
| Bermuda grass | 8 (12.1) |
| Johnson grass | 7 (10.6) |
| Dog | 6 (9.1) |
| Careless weed | 4 (6.1) |



PEF meter usage compliance





Result

| | Good Compliance (> 50%) (N=30) | Poor Compliance (< 50%) (N=36) | P-value |
|---|-----------------------------------|-----------------------------------|---------------|
| Duration of ICS use (yr) , median (IQR) | 3.8 (2.5-6.5) | 7.6 (6.3-9.2) | 0.015* |
| 3 months PEFR PEF variability | 7.9 (5.8-13.5) | 9.4 (5.5-15.9) | 0.59 |
| Severity of asthma , n (%) | | | |
| • Moderate | 18 (54.5) | 10 (62.5) | 0.535 |
| • Severe | 11 (33.3) | 3 (18.8) | |
| PAQLQ score of 7 at 1 st visit, n (%) | 5 (15.1) | 2 (12.5) | 0.804 |
| Step-down treatment in next 3 months, n (%) | 10 (30.3) | 2 (12.5) | 0.208 |



Result

- **Seventeen (25.8%) children were able to step-down inhaled corticosteroid treatment.**
- **Children with good compliance of PEF meter usage who had PAQLQ of 7 had a greater odds of ability to step-down asthma medications in the next 3 months (odds ratio 6.2; with statistically significant 95% confidence interval, 1.5-24.4, p-value 0.008).**



Conclusion

- **PEF meter usage compliance gradually decrease within 3 months**
- **Patients with longer duration of ICS use might lack awareness of peak flowmeter usage**
- **In children with good compliance, PAQLQ score of 7 could predict the ability to step-down asthma medication**



Discussion

- **Compliance tended to decrease overtime.**
- **PAQLQ was used to assess QoL in children with asthma which covered all aspect of activity limitation, symptoms and emotional functions.**
- **PAQLQ might be a tool to help assess patient readiness to step-down treatment.**

Thank You