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An Education Programme: Parent-administered metered-dose inhaler (MDI) in treatment of bronchitis and mild to moderate respiratory distress in a Paediatric Emergency Department in Singapore



ANC Nur Nasiha Binte Mohamed Bahrudin¹, SSN Minnie Mariano Tan, SSN Kathryn Anne Tan Yuste, SSN Shih Kai Lee, SSN Gladys Teiw Jia Ning, SN Peggy Ang, SN Germaine Reubena Eu Shu Hui, SN Cherie Tan, Dr Sashikumar Ganapathy, NC Zhang Rui Li, Jeslyn Neo³, Bernard Wong³, NC Sng Qian Wen²,

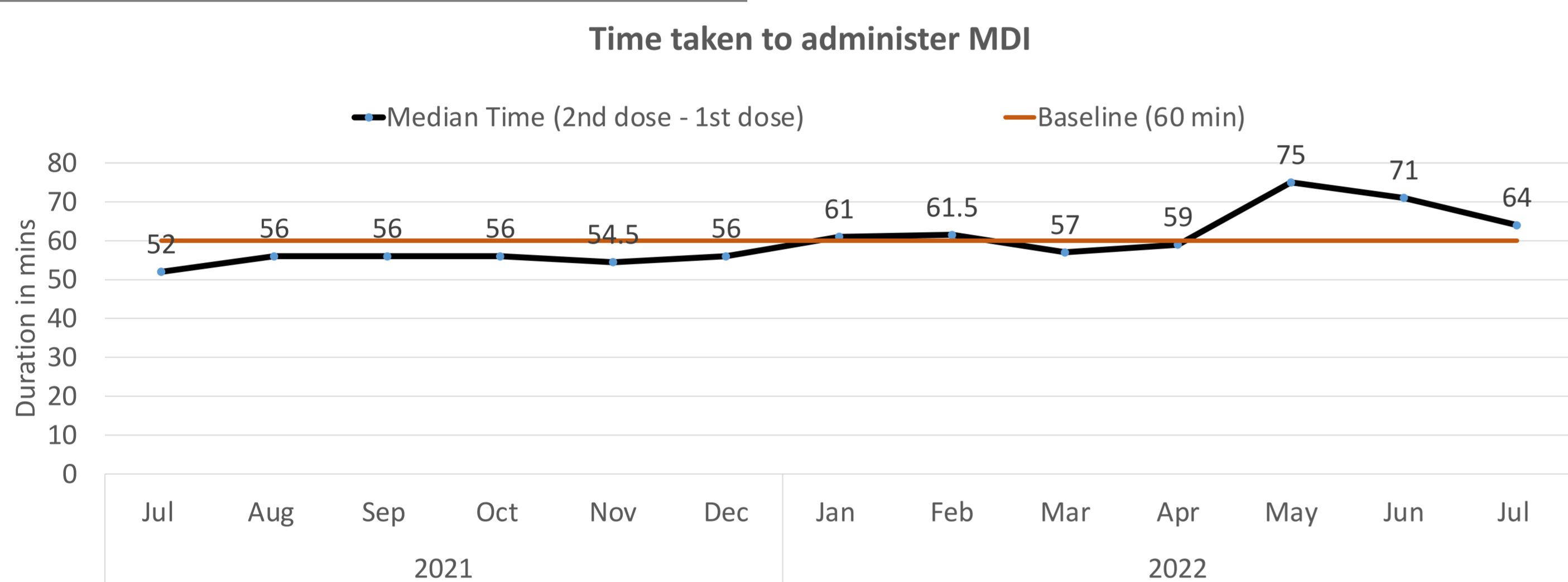
1: Department of Emergency Medicine, 2: Children's Intensive Care Unit, 3: Quality, Safety and Risk Management

Background

The KK Women's and Children's Emergency Department receives approximately 61,233 patients annually. Out of these visits, 4,657 patients requires medical attention for respiratory conditions such as asthma exacerbations, bronchitis, bronchiolitis and bronchopneumonia requiring metered dose inhaler (MDI) treatment (Salbutamol and Atrovent). Early administration of MDI is critical in ensuring timely treatment of these respiratory conditions.

The project aims to introduce a programme that educates and empower parents to administer MDI for the paediatric population who attend Children's Emergency Department.

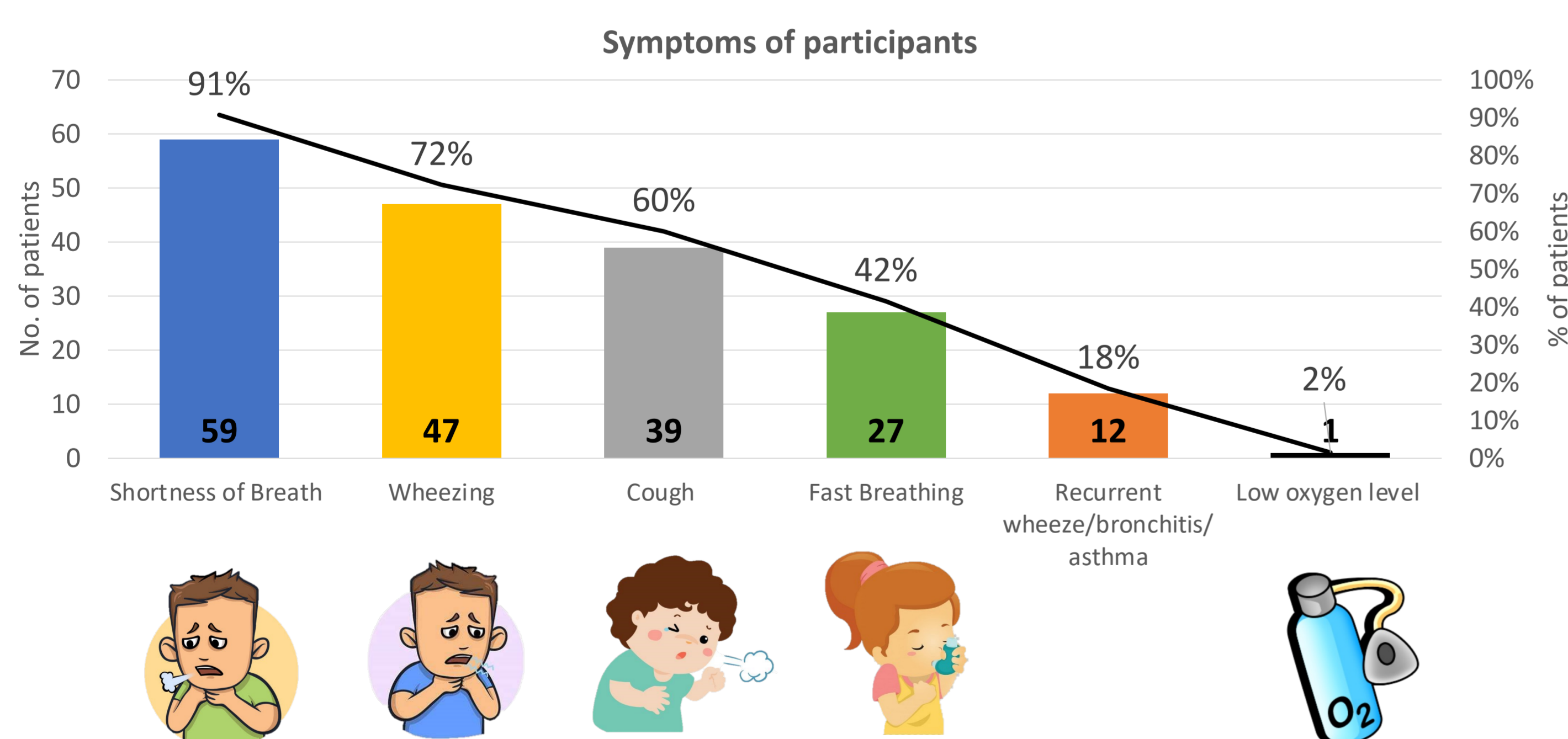
Problem & Aim



The duration of time taken to administer the MDI cycle was abstracted from July 2021 to July 2022. The average median time taken was 60 minutes. The aim of this study was to reduce the duration of time taken to administer MDI cycle; from **60 mins** to **25 mins** (20 minutes is the ideal time).

Methodology & Interventions

A pre and post-test study design was conducted on 65 patients who have participated in this programme. Participants ages between four to thirteen years old with a patient acuity score (PACS) category P2+, needing more than one MDI cycle and an oxygen saturation of above 95% on room air. They presented to Children's Emergency due to:



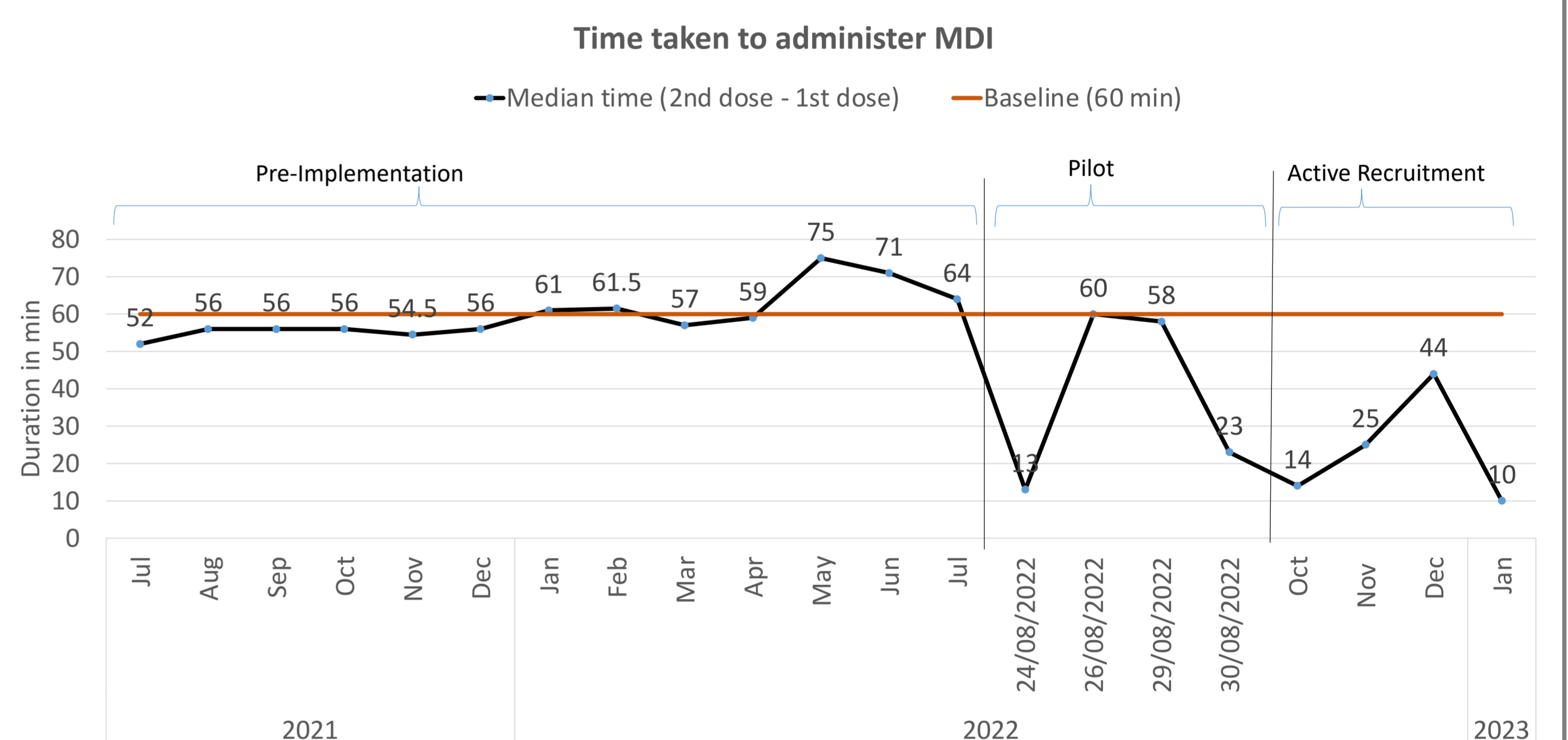
An information leaflet containing the programme's eligibility criteria and interventions were given to the participants. With the use of implied consent, participation is voluntary. A detailed explanation was provided to participants prior to the study. Ethical considerations has been reviewed by the Institutional Review Board (IRB). After the nurse demonstrates the administration of the first MDI cycle, parents were invited to watch a video on "parent-administered MDI educational programme" via a QR code. Parents were asked to administer the second MDI under nurses' supervision.

A competency checklist was used to assess all participants, visual analogue scale (VAS) to assess the child's level of anxiety and parents survey questionnaire were utilized as well.

Snippets of Education video

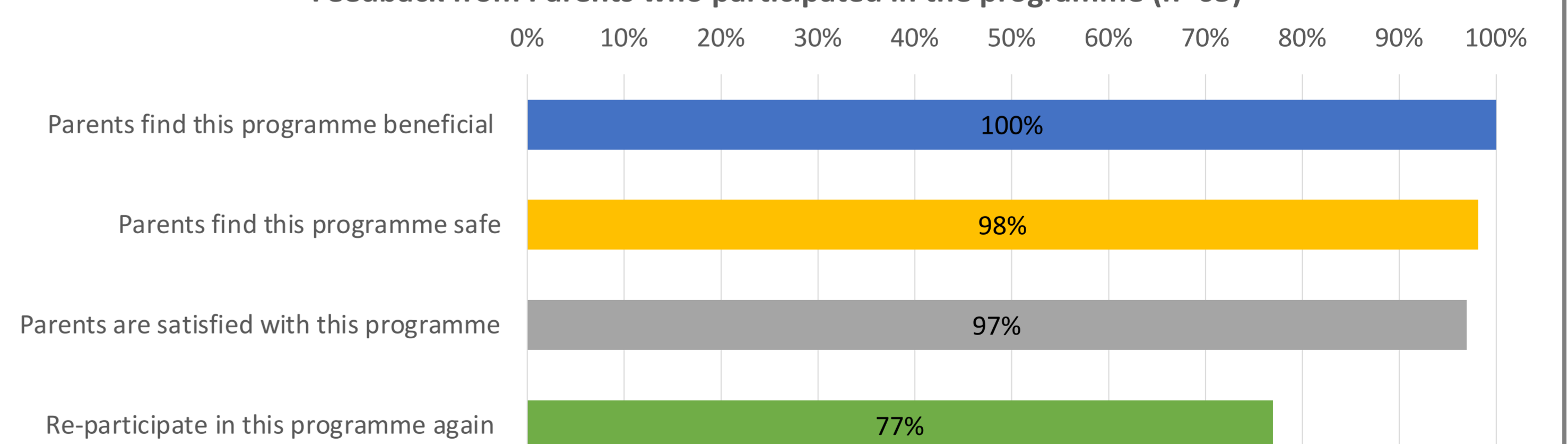


Results



The average median time taken has reduced, from **60 mins** to **24 mins** consolidating both the pilot and active recruitment period. The programme to educate and empower parents to administer MDI for their children was a success, as it illustrated statistical improvement at p-value = 0.00452 (Independent T-Test). Feedback from parents were positive too.

Feedback from Parents who participated in the programme (n=65)



Conclusion

The programme has proven to be beneficial and safe for parents and children in a Paediatric Emergency department. Future studies may explore wider age group and patient's oxygen saturation. Impact on time savings for nursing workload and nurses' satisfaction will be studied in detail to further understand its impact to improve the workflow efficiency in the emergency department. Solutions may be fine-tuned to reduce the time further to 20 mins.