

OK-AIR: 2X2 RANDOMIZED TRIAL TO IMPROVE INDOOR AIR QUALITY AND REDUCE ABSENCES IN HEAD START

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INTRODUCTION

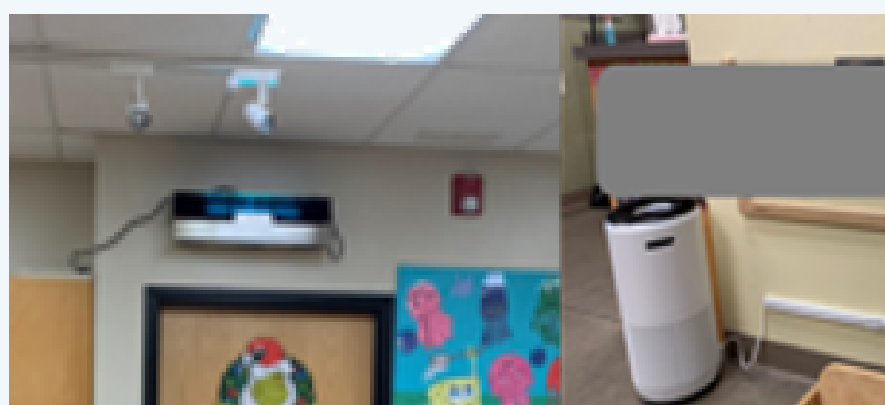
OK-AIR is an evaluation of the potential for low-cost and low-burden interventions (e.g., air purifiers) to have significant and meaningful impacts on teachers' and children's health and children's development.

- Air quality in ECE settings is under-researched, with young children being the most vulnerable.
- Positive health is crucial for children's growth and learning; and for them to reap the benefits of ECE.
- The current teacher shortages highlight the importance of teacher health and their perceptions about their work environment.
- Indoor air quality is another important aspect of classroom/program quality, especially for ensuring all children have access to healthy learning environments.

EQUIPMENT



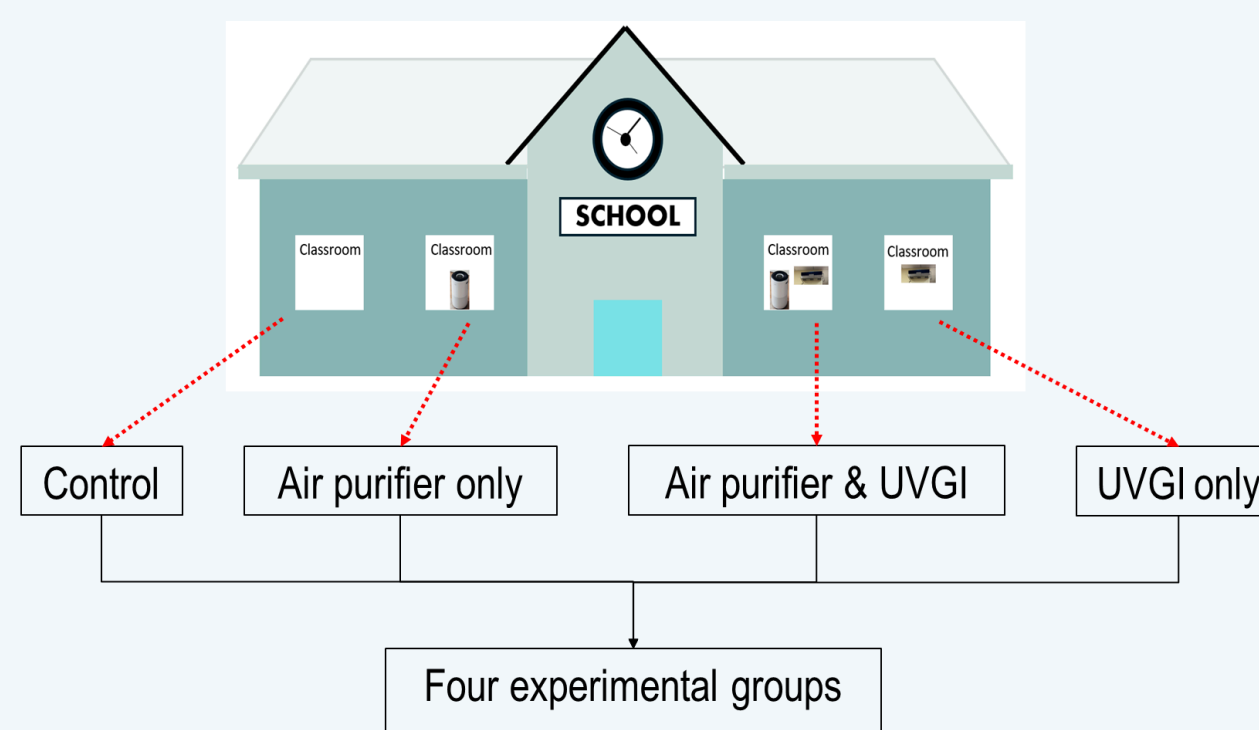
(A) Continuous air quality monitoring via wireless sensor



(B) Upper-Room Ultraviolet Germicidal Irradiation (UVGI) for Upper Air

(C) Portable Air Purifier for Lower Air

RCT STUDY DESIGN



Participating sites (for 2023-25) include 5 Head Start/Early Head Start Programs:

- Rural areas: two sites
- Semi-rural/sub-urban: one site
- Urban areas: two sites

Across these 5 participating sites, we consented/enrolled:

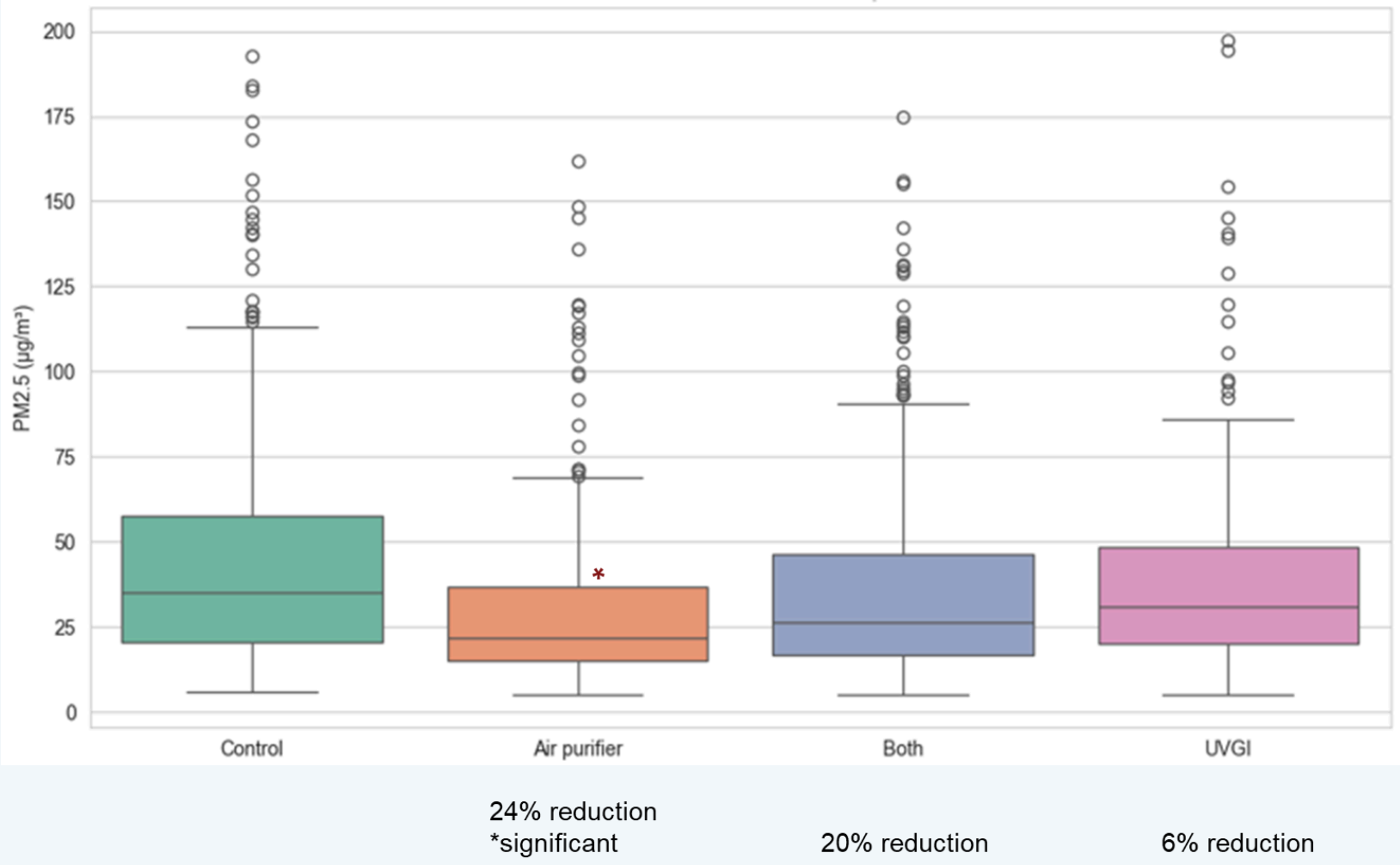
- 336 children between the ages of 1 and 4
- 67 teachers
- 5 site directors

CONCLUSIONS

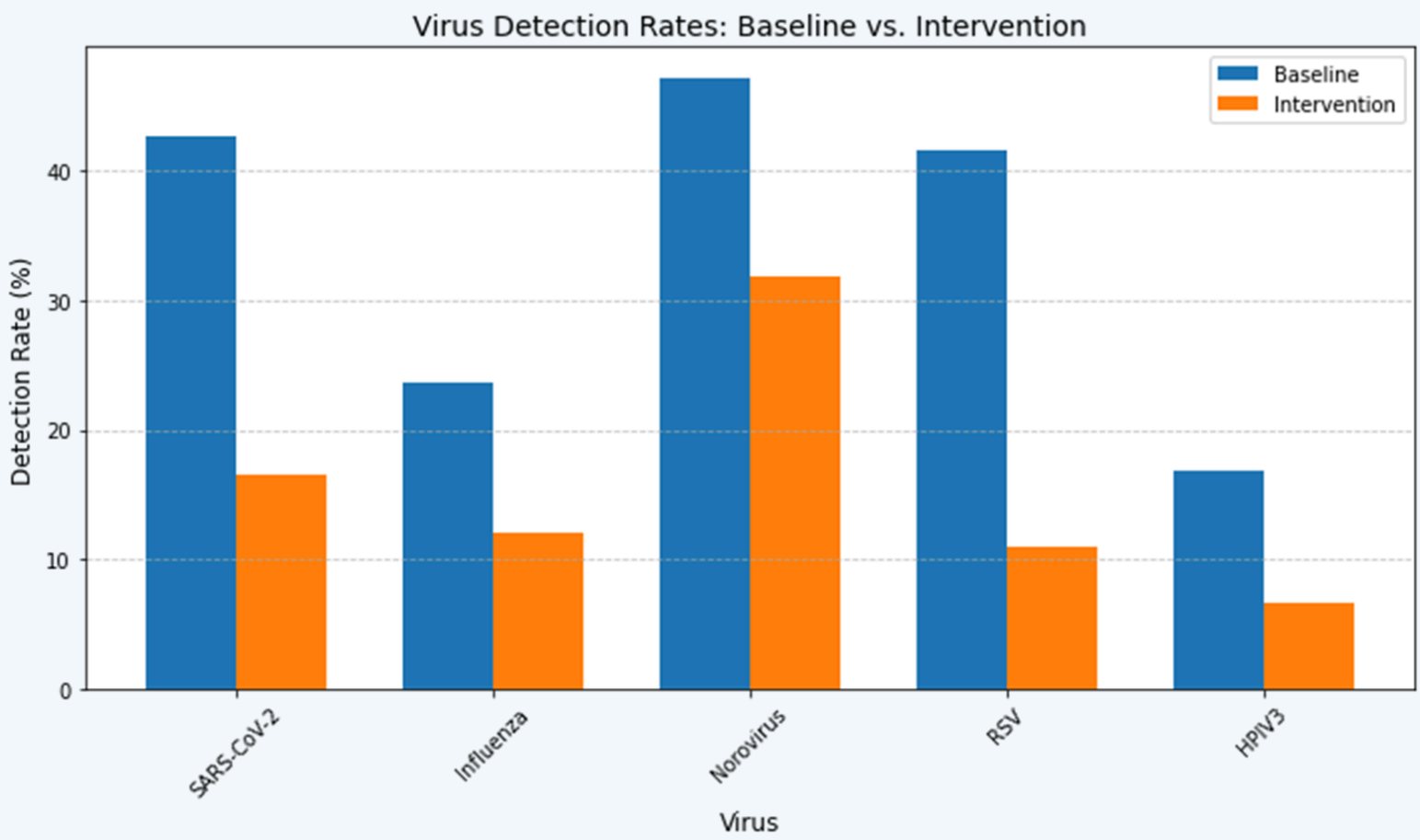
- Air purifiers significantly improved indoor air quality in ECE classrooms by reducing 51% of PM2.5 particles. Among the four groups, the air purifier intervention group shows 24% lower PM2.5 compared to the control.
- The overall virus detection rates during intervention time periods (34.4%) are significantly lower than during baseline time periods (15.6%). There are some differences for individual viruses.
- Virus detection rates significantly decreased over time after intervention; an opposite trend to the rising community infectious rates in Oklahoma. Analyses pending on outcome of reduced school absences due to illness.
- Early childhood educators and the field at large lack research and information about air quality.

DETAILED RESULTS

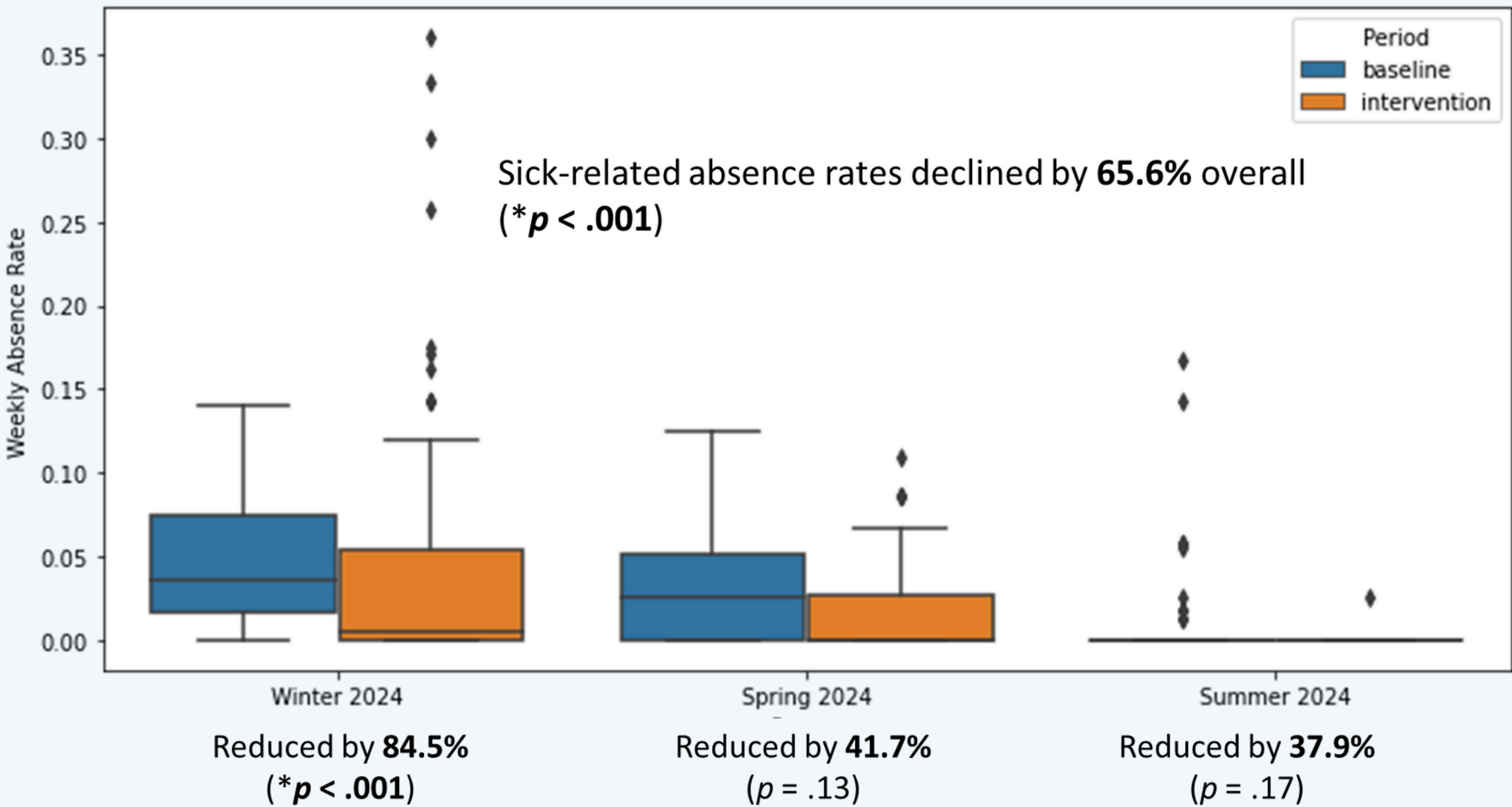
PM2.5 Concentration Among Four Groups



Virus Detection Rate: Baseline vs. Intervention

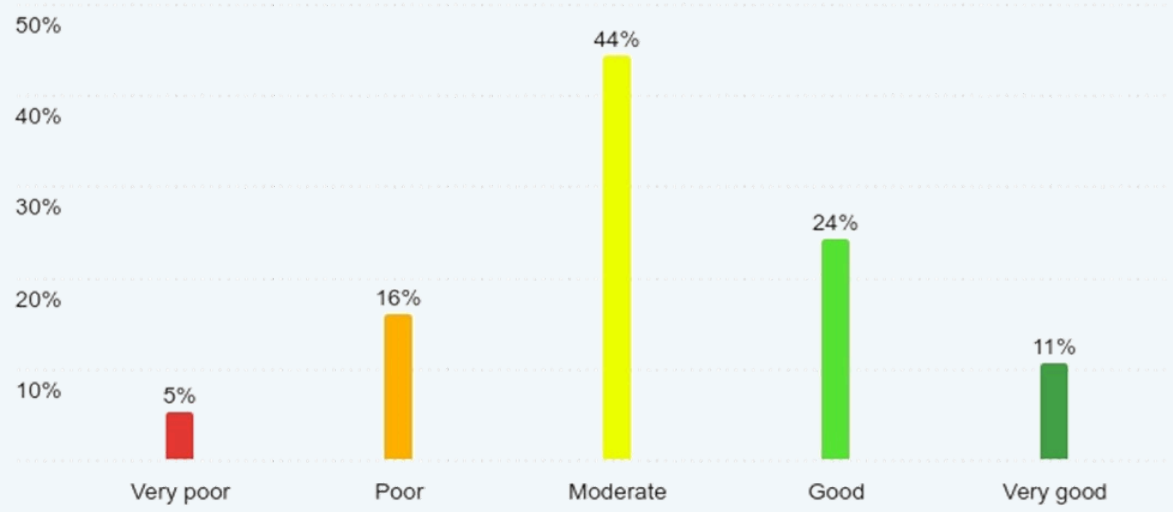


Changes in School Virus Detection Rates and Community Infectious Disease Rates Suggest Potential Cumulative Impacts of the Interventions

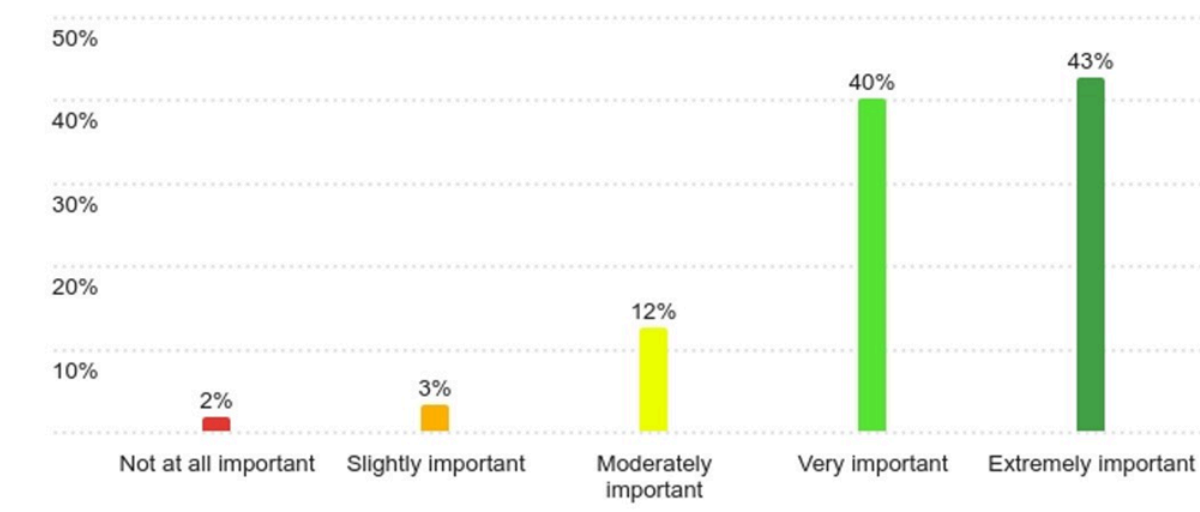


RESULTS - Teachers' Knowledge and Perceptions

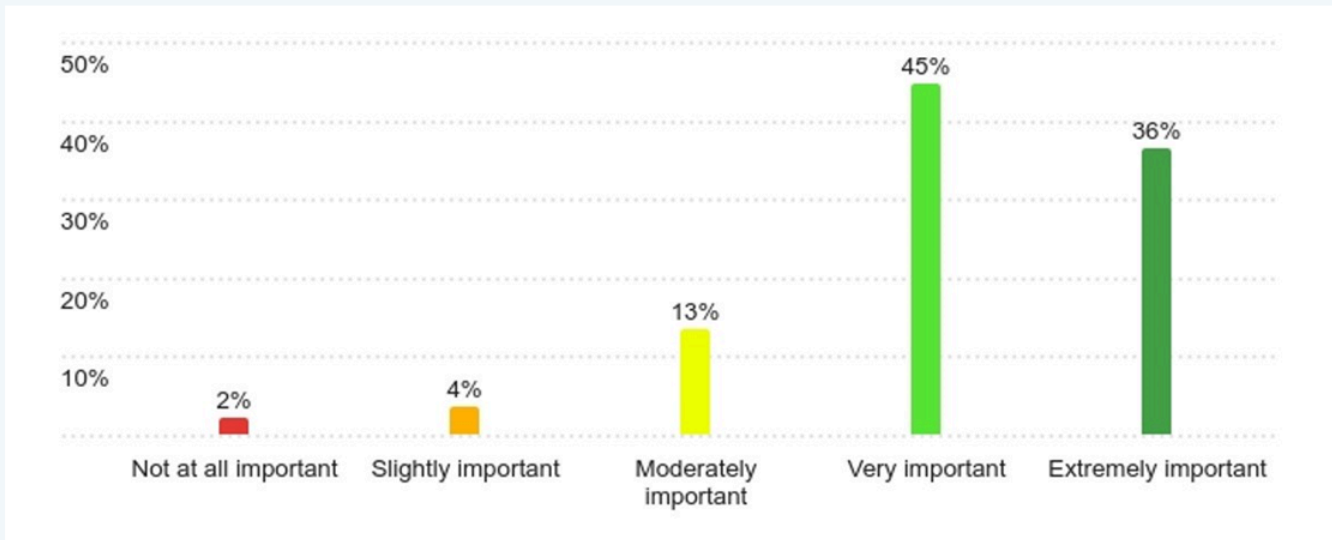
Teachers' self-ratings of their IAQ knowledge



Teachers' Perspective on IAQ's Impact on Children's Well-Being



Teachers' Perspective on IAQ's Impact on staff Well-Being



Teachers' Report of Formal IAQ Training

