Cover page

Official Project Title: Reducing Pesticide Exposures in Child Care Centers

NCT # 03319927

Document: **Statistical Analysis**

Plan Document Date 8/13/2025

Statistical Analysis Plan

Frequency tables for all the variables and measures of central tendency and variability for continuous variables were stratified by randomization group to check for imbalances. If the two groups differ significantly at baseline on covariates, we will use methods based on the Rubin causal model (e.g., propensity scores, double-robust estimation) to obtain the desired population-level estimates under the counterfactual assumption of balanced groups.(Luellen, Shadish, & Clark, 2005; Rubin, 2004; Seaman & Copas, 2009; Shadish, Luellen, & Clark, 2006; Weitzen, Lapane, Toledano, Hume, & Mor, 2004) Descriptive analyses will also yield important information about the child care centers' levels of pesticide contamination and child exposures; these data were summarized by group, time, and cohort. Primary inferential analyses were performed using tobit regression models which provided an approach for modeling repeatedly measured and clustered dependent variables in this study.(Verbeke & Molenberghs, 2000) SAS(SAS Institute, 2002). Survey and observational data were analyzed using parametric or non-parametric statistics based on the distribution of the dependent variable aggregated by child care center (n=85). All tests used a priori $p<.05$ as level of statistical significance.

Specific Aim 1. To determine if a nurse-led IPM workshop improves child care center staff's IPM knowledge (a) **Unit of Analysis**: Child care staff aggregated by center. (b) **Dependent Variable:** IPM knowledge score. (d) **Independent Variables: Group and Time.** Paired ttests were conducted to assess change in knowledge at baseline and post-IPM workshop.
Specific Aim 2. To determine if an IPM intervention in child care centers (a) increases the number of IPM policies, (b) increases IPM practices, (c) decreases pest problems (i.e., number of pests present, pest debris), and (d) increases center director's self-efficacy. (a) **Unit of Analysis**: Child care centers. (b) **Dependent Variable:** IPM policy, IPM practices, pest problems, director self-efficacy. (c) **Independent Variables: Group and Time.** Normally distributed dependent variables were analyzed using ttests or ANOVA and non-normally distributed dependent variables were analyzed using Kruskall-Wallis tests.
Specific Aim 3: To determine if an IPM intervention reduces pesticide contamination in the intervention IPM child care centers compared to the PA control centers. (a) **Unit of Analysis**: Child care centers. (b) **Dependent Variable:** Pesticide concentrations in dust. (c) **Independent Variables: Group, Time, and Cohort.** Tobit regression models were conducted with an additional random intercept term for child care center to account for correlations within centers across timepoints (baseline, post-intervention). The concentrations and detection of the 15 pesticides measured in dust were analyzed separately using the STATA command 'tobit'.
Specific Aim 4: To determine if an IPM intervention reduces children's exposure to pesticides in the IPM intervention child care centers compared to the children in the PA control centers. (a) **Unit of Analysis**: Enrolled children with complete wristband data at baseline and post-intervention aggregated by child care center. (b) **Dependent Variable:** Pesticides measured in children's wristbands worn at the child care. (c) **Independent Variables: Group, Time, and Cohort.** Pesticide concentrations analyzed in the silicone wristbands. (c) **Independent Variables: Group, Time, and Cohort.** Tobit regression models were conducted with an

additional random intercept term for child care center to account for correlations within centers across timepoints (baseline, post-intervention). The concentrations and detection of the 13 pesticides measured in dust were analyzed separately.