# UNIVERSITY OF BUEA

## FACULTY OF HEALTH SCIENCES

## DEPARTMENT OF PUBLIC HEALTH AND HYGIENE

**STATISTICAL ANALYSIS PLAN:**
**PRE AND POST-IMPLEMENTION OF A YOUNG FIRST AIDERS (YOFA) TRAINING PROGRAM AMONGST EARLY SECONDARY SCHOOL CHILDREN ON INJURY AND TRAUMA FIRST AID IN FAKO DIVISION, CAMEROON.**

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## Introduction

This study aimed to evaluate the effectiveness, sustainability, usability, and feasibility of the Young First Aiders (YoFA) trauma first aid training program among early secondary school children in the Fako Division of Cameroon. For the quantitative part of the study, the researchers used a quasi-experimental, control pre-test posttest research design, while focus group discussions and in-depth interviews were used for the qualitative part of the study.

## Study Populations

The quantitative analysis involved children in the intervention and control groups who had complete knowledge scores at the baseline and immediately after the test (modified intention-to-treat population). The retention analyses involved children in the intervention group with complete knowledge scores at the baseline, immediately after the test, and three months later. Usability and scenario analyses included participants with complete data for those assessments. The qualitative part of the study involved purposively selected children, teachers, school administrators, and parents.

## Endpoints

The primary endpoint was the change in trauma first-aid knowledge score from baseline to the immediate post-test between the intervention and control groups.

Secondary quantitative outcome measures included educational improvement that is significant in terms of knowledge (i.e., at least a 10-point gain), knowledge retention after three months, competency achievement (70% or more), behavioral preparedness, System Usability Score (SUS), first-aid skills from scenarios, and other aspects of knowledge acquisition and retention. The qualitative endpoint was the identification of themes related to program acceptability, feasibility, usability, barriers, facilitators, and perceived impact.

## Statistical and Qualitative Analysis Methods

Descriptive statistics were utilized to describe participant demographic data and outcome measurements. The continuous data was presented as means ± standard deviation or medians and interquartile ranges while categorical data was presented as frequencies and percentages.

The main effect of the intervention was estimated using a difference-in-differences (DiD) adjusted linear regression change-score analysis with HC3 robust standard errors, controlling for covariates such as age, gender, and grade. The results are presented as mean differences (95% CIs and p-values).

Comparisons between groups for educational improvements (defined as> 10-point improvements) were performed using Pearson's chi-square test with odds ratios (ORs) and 95% CIs. Repeated-measures analysis was performed on knowledge retention in the intervention group, comparing baseline, immediate posttest, and 3-month post-completion scores, with a Bonferroni correction for pairwise comparisons. Behavioral readiness, usability, and scenario performance outcomes were analyzed using parametric or non-parametric tests depending on the data distribution. The relationships between knowledge and scenario performance outcomes were analyzed using Pearson's or Spearman's correlation coefficient, accordingly.

Qualitative data were transcribed verbatim and subjected to thematic analysis in accordance with Braun and Clarke. Inductive coding was done using Dedoose qualitative analysis software (Version 10.0.35).

Statistical significance was set to two-sided $\alpha = 0.05$. Statistical analyses of quantitative data were done in R (version 4.5.2).

## Handling Missing Data

Analyses used a complete-case approach for each outcome, and missing values were not imputed. Missing data patterns were described by study group and assessment time point. For the three-month retention analysis, characteristics of participants lost to follow-up were compared with those of participants who completed follow-up to assess potential attrition bias.

**Sensitivity Analyses**

Sensitivity analysis was performed comparing the adjusted and unadjusted regression models, using normal versus HC3 standard errors, and applying other analytical approaches when assumptions were violated. Also, sensitivity analyses were conducted for≥10-point absolute and ≥25% relative improvements, and for the effect of attrition on retention outcomes.

Results from qualitative research were compared across participant groups to identify converging and divergent views, and qualitative and quantitative data were combined in interpreting findings using a mixed-methods triangulation approach.