

Abstract Title: Empowering Mothers to Reduce Household Food Waste: A Mixed-Methods Impact Evaluation of the Mama4Planet Program in Sleman, Indonesia

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Background: Food waste crises result in significant environmental, nutrition, and economic losses. In Sleman, Indonesia, household food waste (HFW) is the main cause of waste emergency. Mama4Planet addressed this issue by empowering mothers to reduce HFW, exploring their crucial role in sustainable food systems. The program included cadres training and cadre-led education for local mothers, followed by gamification to encourage practices.

Objectives: To evaluate Mama4Planet's impact on mothers' knowledge, attitudes, and practices regarding HFW reduction in Sleman, Indonesia.

Methods: Trained mothers (cadres) and local mothers were recruited using purposive sampling. Cadres' knowledge (pre- and post-test), attitudes (in-depth interviews), and practices (HFW weight before and after the intervention) were measured. Paired t-tests were used to analyse pretest-posttest and HFW weight comparisons. Qualitative data were analysed using thematic analysis.

Results: Cadres' knowledge showed significant improvements ($p < 0.05$) across three training topics: *Introduction to Climate Change* ($n=16$, mean change 0.63, 95% CI ± 0.53), *Food Purchasing and Storage* ($n=13$, mean change 1.23, 95% CI ± 0.45), and *Healthy Meal Preparation and Consumption* ($n=8$, mean change 1.13, 95% CI ± 1.1). The intervention also led reduction of 64.28% in HFW among cadres (baseline 0.89 kg/household/day, 95% CI ± 1.20 , $p < 0.01$) and 56.53% among local mothers (baseline 0.29 kg/household/day, 95% CI ± 0.15 , $p < 0.01$). Following the program, mothers expressed increased awareness and commitment to HFW reduction and initiated food management strategies at both household and community levels.

Conclusions: Mama4Planet program significantly improved mothers' knowledge, attitudes, and practices on HFW reduction in Sleman, Indonesia. This highlights the potential of empowering mothers as key drivers for HFW reduction initiatives. Future research can explore the program's long-term impacts and benefits on nutrition and household economics.