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Supplementary appendix

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Supplement to: Caruso BA, Sclar GD, Routray P, et al. Effect of a low-cost, behaviourchange intervention on latrine use and safe disposal of child faeces in rural Odisha, India: a cluster-randomised controlled trial. *Lancet Planet Health* 2022; **6**: e110–21.

SUPPLEMENTAL MATERIALS

Effect of the *Sundara Grama* behavior change intervention on latrine use and safe disposal of child feces in rural Odisha, India: a cluster randomized controlled trial

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<u>Supplemental</u> Figure 1: Intervention and control villages for evaluation of *Sundara Grama* latrine use and safe child feces disposal intervention, Puri District, Odisha, India



Notes:

The main map was created in ArcMap 10.8.1 by ESRI. It used data from HERE, Garmin, and OpenStreetMap. For the insert, shapefiless for India, Odisha, and Puri were retrievd from the GeoData Library of the University of Texas at Austin: https://geodata.lib.utexas.edu/.

Supplemental Text

'Missing Data

Cases with missing data were excluded in the reported analyses (i.e. complete case analysis) and we did not use imputation methods to adjust for missingness in our analyses. (The numbers of and reasons for missingness are detailed in the trial flow diagram presented in Figure 2 of the manuscript.)

A number of tests and sensitivity analyses were conducted to examine the potential impact of missing data. These included 1) examination of the distribution of missing values between the control and intervention arms and stratification by covariates of interest (age, sex, SES, education); 2) conducting Little's MCAR test, as specified in our pre-analysis plan; 3) comparing the results of fully adjusted GEE models, which excluded participants with covariate missingness, to unadjusted GEE models, which did not exclude those participants; and 4) comparing GEE models to mixed effect models fit with full information maximum likelihood and robust to missingness under the MAR assumption.

Examination of the distribution of missing values between arms and stratification by covariates of interest revealed a similar pattern of missingness in both groups both overall and within covariate stratum. Little's test was nonsignificant (p=0.45), indicating that the primary outcome was missing completely at random (MCAR) and suggesting a lack of bias from the exclusion of cases with missing outcome data. Further, comparing the results of fully adjusted GEE models to unadjusted GEE models showed no substantive difference in effect estimates. Similarly, comparing GEE models to mixed effect models fit with full information maximum likelihood and robust to missingness under the MAR assumption showed no substantive difference from the reported GEE results. Given the totality of these findings, we are confident that the exclusion of cases with missing data did not result in biased effect estimates.

Supplemental Tables

| Number of repairs | Repaired latrines (%) |
|-------------------|--|
| 155 | 57.0% |
| 0 | 0.0% |
| 2 | 0.7% |
| 40 | 14.7% |
| 13 | 4.7% |
| 38 | 14.0% |
| 52 | 19.1% |
| 57 | 21.0% |
| 1 | 0.4% |
| 8 | 2.9% |
| | Number of repairs 155 0 2 40 13 38 52 57 1 8 |

Supplemental Table 1: Types of repairs reported among households with a latrine at endline (n=272)

Note: Multiple repairs possible per household; n = 272 repairs among 268 households reporting having received repairs at endline. 382 Households were eligible for repairs, and 24 were lost to follow-up resulting in 75% (268) of 358 reporting having received repairs.

<u>Supplemental</u> Figure 2: Baseline and endline values and difference in difference (DID) of latrine use at last defecation among individuals age five and older from latrine owning households, by study arm and sex.



| | Ν | | Baseline Latrine Use and Safe Disposal of Child Feces, by Age Group ¹ | | Endline Latrine Disposal of Child Grou | Use and Safe Feces, by Age p ¹ |
|--------------------------------|--------------|---------|--|--------------|--|---|
| | Intervention | Control | Intervention | Control | Intervention | Control |
| Latrine Use | | | | | | |
| All age 5 and older | 6544 | 6862 | 3954 (60.4%) | 4231 (61.7%) | 5267 (80.5%) | 5170 (75.3%) |
| Age 5-12 | 719 | 726 | 456 (63.4%) | 494 (68.0%) | 612 (85.1%) | 578 (79.6%) |
| Age 13-19 | 699 | 844 | 421 (60.2%) | 557 (66.0%) | 573 (82.0%) | 646 (76.5%) |
| Age 20-29 | 1171 | 1216 | 786 (67.1%) | 810 (66.6%) | 988 (84.4%) | 979 (80.5%) |
| Age 30-39 | 1061 | 992 | 706 (66.5%) | 653 (65.8%) | 889 (83.8%) | 768 (77.4%) |
| Age 40-49 | 983 | 1043 | 554 (56.4%) | 616 (59.1%) | 769 (78.2%) | 782 (75.0%) |
| Age 50-59 | 835 | 901 | 466 (55.8%) | 512 (56.8%) | 659 (78.9%) | 659 (73.1%) |
| Age 60+ | 1076 | 1140 | 565 (52.5%) | 589 (51.7%) | 777 (72.2%) | 758 (66.5%) |
| JMP Defined Safe Child Feces | Disposal | | | | | |
| All children under age 5 | 377 | 397 | 87 (23.1%) | 86 (21.7%) | 226 (60%) | 172 (43.3%) |
| 0-12 Months | 71 | 66 | 7 (9.9%) | 3 (4.6%) | 30 (42.3%) | 8 (12.2%) |
| 13-23 Months | 59 | 62 | 2 (3.4%) | 3 (4.8%) | 21 (35.6%) | 15 (24.2%) |
| 24-35 Months | 87 | 87 | 12 (13.8%) | 11 (12.6%) | 56 (64.4%) | 35 (40.2%) |
| 36-47 Months | 79 | 90 | 26 (32.9%) | 29 (32.2%) | 55 (69.6%) | 54 (60.0%) |
| 48-59 Months | 81 | 92 | 40 (49.4%) | 40 (43.5%) | 64 (79.1%) | 60 (65.2%) |
| Latrine Use Among Children U | Jnder Age 5 | | | | | |
| All children under age 5 | 376 | 396 | 58 (15.4%) | 72 (18.2%) | 157 (41.8%) | 148 (37.4%) |
| 0-12 Months | 71 | 66 | 0 (0.0%) | 1 (1.5%) | 1 (1.4%) | 2 (3.0%) |
| 13-23 Months | 58 | 62 | 0 (0.0%) | 0 (0.0%) | 6 (10.3%) | 11 (17.7%) |
| 24-35 Months | 87 | 87 | 5 (5.8%) | 6 (6.9%) | 40 (46.0%) | 26 (29.9%) |
| 36-47 Months | 79 | 89 | 22 (27.9%) | 27 (30.3%) | 47 (59.5%) | 50 (56.2%) |
| 48-59 Months | 81 | 82 | 31 (38.3%) | 38 (41.3%) | 63 (77.8%) | 59 (64.1%) |
| Caregiver Safe Child Feces Dis | posal | | | | | |
| All children under age 5 | 199 | 207 | 12 (6.0%) | 7 (3.4%) | 67 (33.7%) | 22 (10.6%) |
| 0-12 Months | 70 | 63 | 7 (10.0%) | 2 (3.2%) | 29 (41.4%) | 6 (9.5%) |
| 13-23 Months | 52 | 51 | 2 (3.9%) | 1 (2.0%) | 15 (28.9%) | 4 (7.8%) |
| 24-35 Months | 47 | 59 | 1 (2.1%) | 4 (6.8%) | 16 (34.0%) | 9 (15.3%) |
| 36-47 Months | 23 | 27 | 1 (4.4%) | 0 (0.0%) | 6 (26.1%) | 3 (11.1%) |
| 48-59 Months | 7 | 7 | 1 (14.3%) | 0 (0.0%) | 1 (14.3%) | 0 (0.0%) |

Supplemental Table 2: Baseline and Endline Latrine Use and Safe Child Feces Disposal, by Age Category

1. Baseline and endline proportions are unadjusted.

| (11-13-400) | | | | |
|-----------------------------------|-------------|-------|----------------|----------|
| | Effect size | SE | 95% CI% | p-value |
| DID (Intervention*Time) | 0.064 | 0.022 | 0.020; 0.107 | < 0.01 |
| Intervention | -0.014 | 0.033 | -0.079; 0.050 | 0.67 |
| Time | 0.137 | 0.013 | 0.111; 0.162 | < 0.0001 |
| Number of HH members | -0.007 | 0.003 | -0.013; 0.001 | 0.03 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.086 | 0.023 | 0.040; 0.132 | < 0.0001 |
| Quintile 3 | 0.153 | 0.021 | 0.111; 0.195 | < 0.0001 |
| Quintile 4 | 0.239 | 0.019 | 0.202; 0.275 | < 0.0001 |
| Quintile 5 | 0.326 | 0.022 | 0.282; 0.370 | < 0.0001 |
| Sex | | | | |
| Male | -0.093 | 0.007 | -0.106; -0.080 | < 0.0001 |
| Female | Ref | | | |
| Education of male HH head (grade) | 0.010 | 0.001 | 0.008; 0.013 | < 0.0001 |
| Education of female HH head | 0.004 | 0.001 | 0.001; 0.007 | < 0.01 |
| Age category | | | | |
| 5–12 | 0.041 | 0.011 | 0.019; 0.063 | < 0.001 |
| 13–19 | 0.038 | 0.012 | 0.015; 0.061 | < 0.01 |
| 20–29 | 0.044 | 0.011 | 0.023; 0.065 | < 0.0001 |
| 30–39 | Ref | | | |
| 40–49 | -0.027 | 0.012 | -0.050; 0.003 | 0.03 |
| 50–59 | -0.046 | 0.013 | -0.071; -0.020 | < 0.01 |
| 60+ | -0.090 | 0.012 | -0.114; -0.065 | < 0.0001 |
| Intercept | 0.446 | 0.038 | 0.371; 0.521 | < 0.0001 |

Supplemental Table 3: Effect of intervention on latrine use among individuals age five and older (n=13406)

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------|-------------|-------|----------------|----------|
| DID (Intervention*Time) | 0.066 | 0.023 | 0.022; 0.111 | < 0.01 |
| Intervention | -0.025 | 0.031 | -0.087; 0.036 | 0.42 |
| Time | 0.129 | 0.013 | 0.103; 0.155 | < 0.0001 |
| Number of HH members | -0.007 | 0.003 | -0.013; -0.001 | 0.03 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.094 | 0.026 | 0.044; 0.144 | < 0.001 |
| Quintile 3 | 0.168 | 0.022 | 0.125; 0.212 | < 0.0001 |
| Quintile 4 | 0.243 | 0.022 | 0.201; 0.286 | < 0.0001 |
| Quintile 5 | 0.322 | 0.024 | 0.275; 0.369 | < 0.0001 |
| Education of male HH head | 0.009 | 0.002 | 0.006; 0.012 | < 0.0001 |
| Education of female HH head | 0.004 | 0.002 | 0.000; 0.007 | 0.03 |
| Age category | | | | |
| 5–12 | 0.022 | 0.016 | -0.009; 0.053 | 0.16 |
| 13–19 | 0.059 | 0.014 | 0.031; 0.088 | < 0.0001 |
| 20–29 | 0.059 | 0.012 | 0.036; 0.083 | < 0.0001 |
| 30–39 | Ref | | | |
| 40-49 | -0.008 | 0.015 | -0.037; 0.020 | 0.57 |
| 50-59 | -0.047 | 0.016 | -0.078; -0.016 | < 0.01 |
| 60+ | -0.077 | 0.015 | -0.107; -0.048 | < 0.0001 |
| Intercept | 0.451 | 0.041 | 0.371; 0.531 | < 0.0001 |

Supplementary Table 4: Effect of intervention on latrine use among females age five and older (n=6740)

| (II =0000) | | | | |
|-----------------------------|-------------|-------|----------------|----------|
| | Effect size | SE | 95% CI% | p-value |
| DID (Intervention*Time) | 0.061 | 0.024 | 0.014; 0.108 | 0.01 |
| Intervention | 0.004 | 0.036 | -0.074; 0.067 | 0.92 |
| Time | 0.144 | 0.014 | 0.117; 0.172 | < 0.0001 |
| Number of HH members | -0.008 | 0.004 | -0.015; 0.000 | 0.04 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.078 | 0.026 | 0.028; 0.128 | < 0.01 |
| Quintile 3 | 0.139 | 0.024 | 0.091; 0.187 | < 0.0001 |
| Quintile 4 | 0.235 | 0.020 | 0.196; 0.274 | < 0.0001 |
| Quintile 5 | 0.330 | 0.026 | 0.280; 0.380 | < 0.0001 |
| Education of male HH head | 0.011 | 0.001 | 0.008; 0.014 | < 0.0001 |
| Education of female HH head | 0.005 | 0.002 | 0.002; 0.008 | < 0.01 |
| Age category | | | | |
| 5–12 | 0.054 | 0.016 | 0.023; 0.086 | 0.0008 |
| 13–19 | 0.016 | 0.017 | -0.019; 0.050 | 0.37 |
| 20–29 | 0.027 | 0.015 | -0.002; 0.057 | 0.07 |
| 30–39 | Ref | | | |
| 40–49 | -0.049 | 0.016 | -0.080; -0.018 | < 0.01 |
| 50–59 | -0.046 | 0.017 | -0.080; -0.013 | < 0.01 |
| 60+ | -0.102 | 0.016 | -0.132; -0.071 | < 0.0001 |
| Intercept | 0.352 | 0.040 | 0.274; 0.431 | < 0.0001 |

Supplementary Table 5: Effect of intervention on latrine use among males age five and older (n=6666)

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------|-------------|-------|---------------|----------|
| DID (Intervention*Time) | 0.043 | 0.019 | 0.006; 0.080 | 0.02 |
| Intervention | -0.007 | 0.029 | -0.065; 0.050 | 0.80 |
| Time | 0.076 | 0.011 | 0.054; 0.099 | < 0.0001 |
| Number of HH members | 0.005 | 0.003 | -0.001; 0.011 | 0.09 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.086 | 0.022 | 0.042; 0.130 | < 0.001 |
| Quintile 3 | 0.163 | 0.027 | 0.110; 0.216 | < 0.0001 |
| Quintile 4 | 0.238 | 0.023 | 0.193; 0.282 | < 0.0001 |
| Quintile 5 | 0.302 | 0.023 | 0.256; 0.348 | < 0.0001 |
| Education of male HH head | 0.005 | 0.002 | 0.002; 0.009 | < 0.01 |
| Education of female HH head | 0.001 | 0.001 | -0.002; 0.004 | 0.44 |
| Intercept | 0.504 | 0.033 | 0.439; 0.569 | < 0.0001 |

Supplementary Table 6: Effect of intervention on proportion of latrines reported by enumerators to be in use (N=3281)

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------------|-------------|-------|----------------|---------|
| DID (Intervention*Time) | 0.066 | 0.023 | 0.022; 0.111 | < 0.01 |
| Intervention | -0.018 | 0.034 | -0.085; 0.049 | 0.60 |
| Time | 0.137 | 0.013 | 0.111; 0.163 | < 0.001 |
| Number of HH members | -0.007 | 0.003 | -0.013; 0.001 | 0.03 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.083 | 0.024 | 0.040; 0.130 | < 0.001 |
| Quintile 3 | 0.150 | 0.021 | 0.107; 0.191 | < 0.001 |
| Quintile 4 | 0.235 | 0.018 | 0.199; 0.271 | < 0.001 |
| Quintile 5 | 0.320 | 0.022 | 0.277; 0.364 | < 0.001 |
| Sex | | | | |
| Male | -0.092 | 0.007 | -0.104; -0.080 | < 0.001 |
| Female | Ref | | | |
| Education of male HH head (grade) | 0.011 | 0.001 | 0.008; 0.013 | < 0.001 |
| Education of female HH head | 0.004 | 0.001 | 0.001; 0.007 | < 0.01 |
| Age category | | | | |
| 5–12 | 0.039 | 0.011 | 0.017; 0.061 | < 0.001 |
| 13–19 | 0.038 | 0.011 | 0.015; 0.061 | 0.001 |
| 20–29 | 0.043 | 0.010 | 0.023; 0.063 | < 0.001 |
| 30–39 | Ref | | | |
| 40–49 | -0.028 | 0.011 | -0.050; 0.005 | 0.02 |
| 50–59 | -0.045 | 0.013 | -0.070; -0.020 | < 0.001 |
| 60+ | -0.090 | 0.012 | -0.114; -0.065 | < 0.001 |
| Intercept | 0.445 | 0.038 | 0.370; 0.520 | < 0.001 |

Supplemental Table 7: Effect of intervention on latrine use among individuals age five and older, adjusting for participation in nested measurement survey (repeated measures) (n=13406)

| Effect size | SE | 95% CI% | p-value |
|-------------|---|--|--|
| | | | |
| 0.075 | 0.024 | 0.028; 0.121 | < 0.01 |
| -0.008 | 0.040 | -0.086; 0.071 | 0.85 |
| 0.133 | 0.013 | 0.106; 0.159 | < 0.0001 |
| 0.620 | 0.027 | 0.567; 0.674 | < 0.0001 |
| | | | |
| 0.143 | 0.037 | 0.071; 0.215 | < 0.0001 |
| 0.025 | 0.036 | -0.046; 0.095 | 0.49 |
| 0.210 | 0.024 | 0.164; 0.256 | < 0.0001 |
| 0.216 | 0.026 | 0.165; 0.267 | < 0.0001 |
| | | | |
| 0.063 | 0.033 | -0.002; 0.127 | 0.06 |
| -0.024 | 0.030 | -0.083; 0.036 | 0.43 |
| 0.190 | 0.023 | 0.146; 0.234 | < 0.0001 |
| 0.183 | 0.023 | 0.137; 0.229 | < 0.0001 |
| | | | |
| 0.148 | 0.041 | 0.067; 0.230 | < 0.001 |
| 0.031 | 0.034 | -0.036; 0.098 | 0.37 |
| 0.134 | 0.029 | 0.077; 0.191 | < 0.0001 |
| 0.203 | 0.023 | 0.157; 0.249 | < 0.0001 |
| | Effect size 0.075 -0.008 0.133 0.620 0.143 0.025 0.210 0.216 0.063 -0.024 0.190 0.183 0.148 0.031 0.134 0.203 | Effect size SE 0.075 0.024 -0.008 0.040 0.133 0.013 0.620 0.027 0.143 0.037 0.025 0.036 0.210 0.024 0.216 0.026 0.063 0.033 -0.024 0.030 0.190 0.023 0.183 0.023 0.148 0.041 0.031 0.034 0.134 0.029 0.203 0.023 | Effect sizeSE95% CI% 0.075 0.024 $0.028; 0.121$ -0.008 0.040 $-0.086; 0.071$ 0.133 0.013 $0.106; 0.159$ 0.620 0.027 $0.567; 0.674$ 0.143 0.037 $0.071; 0.215$ 0.025 0.036 $-0.046; 0.095$ 0.210 0.024 $0.164; 0.256$ 0.216 0.026 $0.165; 0.267$ 0.063 0.033 $-0.002; 0.127$ -0.024 0.030 $-0.083; 0.036$ 0.190 0.023 $0.146; 0.234$ 0.183 0.023 $0.137; 0.229$ 0.148 0.041 $0.067; 0.230$ 0.031 0.034 $-0.036; 0.098$ 0.134 0.023 $0.157; 0.249$ |

Supplementary Table 8: Effect of intervention on latrine use and safe child feces disposal (unadjusted)

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------------|-------------|-------|---------------|----------|
| DID (Intervention*Time) | 0.152 | 0.037 | 0.795; 0.225 | < 0.0001 |
| Intervention | 0.010 | 0.035 | -0.059; 0.079 | 0.78 |
| Time | 0.217 | 0.025 | 0.168; 0.265 | < 0.0001 |
| Number of HH members | -0.003 | 0.007 | -0.016; 0.010 | 0.68 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | -0.015 | 0.056 | -0.125; 0.094 | 0.79 |
| Quintile 3 | 0.018 | 0.042 | -0.063; 0.100 | 0.66 |
| Quintile 4 | 0.092 | 0.048 | -0.001; 0.186 | 0.05 |
| Quintile 5 | 0.148 | 0.046 | 0.589; 0.237 | < 0.01 |
| Sex | | | | |
| Male | -0.036 | 0.025 | -0.084; 0.012 | 0.14 |
| Female | Ref | | | |
| Education of male HH head (grade) | 0.007 | 0.003 | 0.000; 0.014 | 0.04 |
| Education of female HH head | 0.005 | 0.004 | -0.003; 0.014 | 0.23 |
| Intercept | 0.099 | 0.068 | -0.035; 0.232 | 0.15 |

| ~ - | | | | | | | |
|----------------|------------|-------------------|--------------|--------------|-----------------|--------------|-------|
| Sunnlamontory | Tahla 0+ 1 | Fffort of Intorva | ntion on IMP | dafinad cafa | child focos dis | nocal (n=77 | 74) |
| Supplemental y | | | | ucificu saic | china reces uis | pusai (II-77 | / - , |

| emiliar en (n=100) | | | | |
|-----------------------------------|-------------|-------|---------------|----------|
| | Effect size | SE | 95% CI% | p-value |
| DID (Intervention*Time) | 0.104 | 0.052 | 0.002; 0.205 | 0.05 |
| Intervention | 0.000 | 0.043 | -0.084; 0.085 | 0.99 |
| Time | 0.245 | 0.034 | 0.180; 0.311 | < 0.0001 |
| Number of HH members | 0.003 | 0.009 | -0.015; 0.021 | 0.76 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | -0.044 | 0.073 | -0.188; 0.099 | 0.55 |
| Quintile 3 | 0.028 | 0.057 | -0.083; 0.139 | 0.62 |
| Quintile 4 | 0.122 | 0.058 | 0.009; 0.235 | 0.04 |
| Quintile 5 | 0.137 | 0.066 | 0.007; 0.267 | 0.04 |
| Education of male HH head (grade) | 0.003 | 0.005 | -0.008; 0.013 | 0.65 |
| Education of female HH head | 0.007 | 0.005 | -0.004; 0.018 | 0.21 |
| Intercept | 0.091 | 0.089 | -0.083; 0.265 | 0.31 |

Supplementary Table 10: Effect of Intervention on JMP defined safe child feces disposal, female children (n=403)

Notes: DID = difference in difference, SE = standard error; HH = household. Estimates adjusted for clustering, ITT analysis.

Supplementary Table 11: Effect of Intervention on JMP defined safe child feces disposal, male children (n=371)

| | Effect size | SE | 95% CI% | p-value | |
|-----------------------------------|-------------|-------|---------------|----------|--|
| DID (Intervention*Time) | 0.205 | 0.047 | 0.113; 0.297 | < 0.0001 | |
| Intervention | 0.014 | 0.049 | -0.083; 0.110 | 0.78 | |
| Time | 0.185 | 0.036 | 0.114; 0.256 | < 0.0001 | |
| Number of HH members | -0.010 | 0.010 | -0.030; 0.009 | 0.30 | |
| SES | | | | | |
| Quintile 1 | Ref | | | | |
| Quintile 2 | 0.021 | 0.079 | -0.135; 0.177 | 0.79 | |
| Quintile 3 | -0.002 | 0.064 | -0.127; 0.123 | 0.98 | |
| Quintile 4 | 0.068 | 0.077 | -0.083; 0.220 | 0.38 | |
| Quintile 5 | 0.174 | 0.067 | 0.042; 0.306 | < 0.01 | |
| Education of male HH head (grade) | 0.012 | 0.004 | 0.003; 0.021 | < 0.01 | |
| Education of female HH head | 0.003 | 0.005 | -0.007; 0.013 | 0.55 | |
| Intercept | 0.083 | 0.095 | -0.104; 0.269 | 0.39 | |

<u>Supplemental</u> Figure 3: Baseline and endline values and difference in difference (DID) of JMP-defined safe child faeces disposal, child latrine use, and caregiver safe disposal of child faeces among children under age five and older from latrine owning households, by study arm and sex



| | Effect size | SE | 95% CI% | p-value |
|-----------------------------------|-------------|-------|---------------|----------|
| DID (Intervention*Time) | 0.071 | 0.035 | 0.004; 0.139 | 0.04 |
| Intervention | -0.029 | 0.031 | -0.090; 0.031 | 0.34 |
| Time | 0.192 | 0.025 | 0.143; 0.241 | < 0.0001 |
| Number of HH members | 0.001 | 0.007 | -0.012; 0.014 | 0.88 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | -0.052 | 0.047 | -0.143; 0.040 | 0.27 |
| Quintile 3 | -0.002 | 0.039 | -0.079; 0.074 | 0.95 |
| Quintile 4 | 0.034 | 0.045 | -0.054; 0.123 | 0.45 |
| Quintile 5 | 0.076 | 0.044 | -0.011; 0.163 | 0.09 |
| Sex | | | | |
| Male | -0.042 | 0.023 | -0.087; 0.003 | 0.07 |
| Female | Ref | | | |
| Education of male HH head (grade) | 0.004 | 0.004 | -0.003; 0.011 | 0.24 |
| Education of female HH head | 0.010 | 0.004 | 0.003; 0.017 | 0.01 |
| Intercept | 0.087 | 0.069 | -0.048; 0.222 | 0.21 |

Supplementary Table 12: Effect of intervention on latrine use among children under age five (n=772)

| ennaren (n=102) | | | | |
|-----------------------------------|-------------|-------|---------------|----------|
| | Effect size | SE | 95% CI% | p-value |
| DID (Intervention*Time) | 0.015 | 0.048 | -0.080; 0.109 | 0.76 |
| Intervention | -0.039 | 0.041 | -0.119; 0.041 | 0.34 |
| Time | 0.202 | 0.029 | 0.144; 0.260 | < 0.0001 |
| Number of HH members | 0.007 | 0.009 | -0.11; 0.025 | 0.44 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | -0.053 | 0.063 | -0.011; 0.069 | 0.39 |
| Quintile 3 | 0.027 | 0.054 | -0.079; 0.133 | 0.62 |
| Quintile 4 | 0.076 | 0.054 | -0.030; 0.181 | 0.16 |
| Quintile 5 | 0.081 | 0.064 | -0.045; 0.208 | 0.21 |
| Education of male HH head (grade) | 0.000 | 0.005 | -0.010; 0.010 | 0.96 |
| Education of female HH head | 0.010 | 0.005 | 0.000; 0.021 | 0.05 |
| Intercept | 0.070 | 0.090 | -0.106; 0.245 | 0.44 |

Supplementary Table 13: Effect of intervention on latrine use among children under age, female children (n=402)

Notes: DID = difference in difference, SE = standard error; HH = household. Estimates adjusted for clustering, ITT analysis.

Supplementary Table 14: Effect of intervention on latrine use among children under age, male children (n=370)

| einiur ein (ii—e / v) | | | | |
|-----------------------------------|-------------|-------|---------------|----------|
| | Effect size | SE | 95% CI% | p-value |
| DID (Intervention*Time) | 0.132 | 0.048 | 0.038; 0.227 | < 0.01 |
| Intervention | -0.029 | 0.043 | -0.112; 0.055 | 0.50 |
| Time | 0.181 | 0.035 | 0.112; 0.250 | < 0.0001 |
| Number of HH members | -0.008 | 0.010 | -0.027; 0.012 | 0.44 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | -0.042 | 0.067 | -0.173; 0.088 | 0.53 |
| Quintile 3 | -0.033 | 0.062 | -0.154; 0.089 | 0.60 |
| Quintile 4 | -0.001 | 0.070 | -0.140; 0.137 | 0.99 |
| Quintile 5 | 0.087 | 0.065 | -0.039; 0.214 | 0.18 |
| Education of male HH head (grade) | 0.009 | 0.005 | 0.000; 0.018 | 0.04 |
| Education of female HH head | 0.007 | 0.004 | -0.001; 0.016 | 0.08 |
| Intercept | 0.076 | 0.090 | -0.100; 0.252 | 0.04 |

| | Effect size | SE | 95% CI% | p-value | | |
|-----------------------------------|-------------|-------|---------------|----------|--|--|
| DID (Intervention*Time) | 0.204 | 0.045 | 0.116; 0.292 | < 0.0001 | | |
| Intervention | 0.026 | 0.021 | -0.016; 0.067 | 0.23 | | |
| Time | 0.072 | 0.018 | 0.038; 0.107 | < 0.0001 | | |
| Number of HH members | -0.012 | 0.006 | -0.023; 0.000 | 0.05 | | |
| SES | | | | | | |
| Quintile 1 | Ref | | | | | |
| Quintile 2 | 0.075 | 0.041 | -0.005; 0.155 | 0.07 | | |
| Quintile 3 | 0.068 | 0.035 | -0.001; 0.137 | 0.05 | | |
| Quintile 4 | 0.119 | 0.037 | 0.046; 0.192 | < 0.01 | | |
| Quintile 5 | 0.172 | 0.039 | 0.095; 0.249 | < 0.0001 | | |
| Sex | | | | | | |
| Male | -0.008 | 0.024 | -0.055; 0.038 | 0.73 | | |
| Female | Ref | | | | | |
| Education of male HH head (grade) | 0.003 | 0.003 | -0.003; 0.010 | 0.34 | | |
| Education of female HH head | -0.006 | 0.004 | -0.013; 0.001 | 0.11 | | |
| Intercept | 0.013 | 0.041 | -0.068; 0.095 | 0.75 | | |

| Supplementary | Table 15: | Effect of I | ntervention | on caregiver | safe d | isposal of | child faeces | (n=406) |
|---------------|-----------|-------------|-------------|--------------|--------|------------|--------------|---------|
| | | | | | | | | |

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------------|-------------|-------|---------------|---------|
| DID (Intervention*Time) | 0.212 | 0.062 | 0.091; 0.332 | < 0.001 |
| Intervention | 0.011 | 0.027 | -0.043; 0.065 | 0.68 |
| Time | 0.106 | 0.031 | 0.044; 0.167 | < 0.001 |
| Number of HH members | -0.007 | 0.008 | -0.023; 0.008 | 0.36 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.063 | 0.055 | -0.045; 0.172 | 0.25 |
| Quintile 3 | 0.060 | 0.046 | -0.031; 0.150 | 0.20 |
| Quintile 4 | 0.131 | 0.051 | 0.031; 0.232 | 0.01 |
| Quintile 5 | 0.147 | 0.047 | 0.054; 0.240 | < 0.01 |
| Education of male HH head (grade) | 0.000 | 0.005 | -0.009; 0.009 | 0.96 |
| Education of female HH head | -0.004 | 0.004 | -0.012; 0.005 | 0.39 |
| Intercept | -0.007 | 0.059 | -0.122; 0.108 | 0.90 |

Supplementary Table 16: Effect of Intervention on caregiver safe disposal of child faeces, female children (n= 208)

Notes: DID = difference in difference, SE = standard error; HH = household. Estimates adjusted for clustering, ITT analysis.

Supplementary Table 17: Effect of Intervention on caregiver safe disposal of child faeces, male children (n=198)

| | Effect size | SE | 95% CI% | p-value |
|-----------------------------------|-------------|-------|---------------|---------|
| DID (Intervention*Time) | 0.193 | 0.055 | 0.085; 0.300 | 0.0004 |
| Intervention | 0.045 | 0.030 | -0.015; 0.105 | 0.14 |
| Time | 0.039 | 0.025 | -0.010; 0.088 | 0.12 |
| Number of HH members | -0.016 | 0.009 | -0.033; 0.002 | 0.08 |
| SES | | | | |
| Quintile 1 | Ref | | | |
| Quintile 2 | 0.085 | 0.058 | -0.028; 0.197 | 0.14 |
| Quintile 3 | 0.078 | 0.052 | -0.023; 0.179 | 0.13 |
| Quintile 4 | 0.115 | 0.051 | 0.015; 0.214 | 0.02 |
| Quintile 5 | 0.204 | 0.062 | 0.083; 0.325 | < 0.01 |
| Education of male HH head (grade) | 0.006 | 0.005 | -0.004; 0.016 | 0.21 |
| Education of female HH head | -0.008 | 0.006 | -0.019; 0.004 | 0.19 |
| Intercept | 0.015 | 0.063 | -0.109; 0.138 | 0.82 |