Pregnant Women's Exposure to Household Air Pollution in Rural Bangladesh: A Feasibility Study for Poriborton: The CHANge Trial

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Table S1. Comparison of mean (SD) hourly $PM_{2.5}$ concentrations ($\mu g/m^3$) measured during baseline and intervention. Bold concentrations are higher than the comparison value.

Hour of Day	Baseline	Intervention	p-value	Likely Cause of the Difference or Lack Thereof
0	24.5 (44.8)	**90.6 (53.5)**	<0.0001	Ambient $PM_{2.5}$
1	20.3 (119.7)	**88.3 (45.2)**	<0.0001	Ambient $PM_{2.5}$
2	37.6 (148.5)	**76.5 (38.0)**	<0.0001	Ambient $PM_{2.5}$
3	20.5 (37.2)	**77.4 (38.3)**	<0.0001	Ambient $PM_{2.5}$
4	14.7 (23.3)	**74.9 (36.9)**	<0.0001	Ambient $PM_{2.5}$
5	33.8 (170.5)	**82.0 (46.6)**	<0.0001	Ambient $PM_{2.5}$
6	101.3 (290.7)	96.5 (53.2)	0.541	
7	**231.1 (497.6)**	140.0 (138.6)	<0.0001	Traditional Stove
8	131.6 (373.3)	125.0 (83.0)	0.456	
9	61.5 (330.6)	**106.3 (128.4)**	<0.0001	Stove Stacking, likely
10	73.0 (358.9)	78.7 (94.5)	0.556	
11	37.8 (153.1)	**75.4 (118.7)**	<0.0001	Ambient $PM_{2.5}$
12	68.4 (252.5)	78.4 (127.0)	0.174	
13	**107.8 (348.0)**	62.8 (67.8)	<0.0001	Traditional Stove
14	**86.3 (360.6)**	59.4 (53.9)	<0.001	Traditional Stove
15	40.3 (199.6)	**69.3 (171.9)**	<0.0001	Ambient $PM_{2.5}$
16	**120.9 (365.0)**	76.4 (71.1)	<0.0001	Traditional Stove
17	146.2 (421.2)	139.3 (182.5)	0.561	Traditional Stove & Stove Stacking
18	64.5 (221.9)	**159.0 (167.3)**	<0.0001	Stove stacking for heat, Kerosene lamps
19	59.5 (136.1)	**132.4 (73.2)**	<0.0001	Stove stacking for heat, Kerosene lamps
20	31.5 (55.6)	**140.7 (85.9)**	<0.0001	Stove stacking for heat, Kerosene lamps
21	42.1 (107.1)	**109.0 (52.5)**	<0.0001	Stove stacking for heat, Kerosene lamps
22	29.7 (42.8)	**95.1 (51.3)**	<0.0001	Ambient $PM_{2.5}$
23	26.5 (39.6)	**89.3 (42.1)**	<0.0001	Ambient $PM_{2.5}$

Table S2. shows the hourly average $PM_{2.5}$ concentrations for both baseline and intervention conditions corrected for background $PM_{2.5}$. The correction factors applied were 13.7 and 58.4 μg/m^3 for baseline and intervention, respectively.

<u>Baseline Background PM2.5 Correction Equation</u>

$$C_{t,cor} = C_{t,u} - C_{bkg} + 20.8$$

Where:

- $C_{t,cor}$ is the corrected hourly average baseline concentration.
- $C_{t.u}$ is the measured (uncorrected) hourly average baseline concentration.
- C_{bkg} is the average of the measured (uncorrected) hourly average baseline concentration of hours 0, 1, 2, 3, 4, 5, 11, 15, 18, 19, 20, 21, 22, and 23. These hours corresponded to the times when cooking was not performed as reported by participant questionnaire responses. $C_{bkg} = 34.5$
- 20.8 is a constant. The value was determined by setting $C_{t,cor}$ equal to 1 for the minimum value of $C_{t,u}$ (14.7, at 0400 hours).

<u>Intervention Background PM2.5 Correction Equation</u>

$$C_{t,cor} = C_{t,u} - C_{bkg} + 20.8$$

Where:

- $C_{t,cor}$ is the corrected hourly average intervention concentration.
- $C_{t.u}$ is the measured (uncorrected) hourly average intervention concentration.
- C_{bkg} is the average of the measured (uncorrected) hourly average intervention concentration of hours 0, 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16, 21, 22, and 23. These hours corresponded

to the times when cooking was not performed as reported by participant questionnaire responses. C_{bkg} = 34.5

- 21.8 is a constant. The value was determined by setting $C_{t,cor}$ equal to 1 for the minimum value of $C_{t,u}$ (59.4, at 1400 hours).

Selection of $C_{t,cor}$ equal to 1 when calculating the constant was required to avoid negative concentrations. This approach is reasonable because the difference between the baseline and intervention constants is 1 (20.8 versus 21.8). The small difference means the application of this simple background correction equation did not influence the interpretation of the PM2.5 concentration data.

Table S2. Hourly mean (SD) $PM_{2.5}$ concentrations corrected for background $PM_{2.5}$ levels.

Hour of Day	Baseline (ug/m^3)	Intervention (ug/m^3)	Traditional Background Corrected	Intervention Background Corrected
0	24.5	90.6	10.8 (23.1)	32.2 (19.4)
1	20.3	88.3	6.6 (13.2)	29.9 (15.4)
2	37.6	76.5	23.9 (91.1)	18.1 (9.1)
3	20.5	77.4	6.8 (13.3)	19.0 (9.4)
4	14.7	74.9	1.0 (1.7)	16.5 (8.2)
5	33.8	82	20.1 (110.8)	23.6 (13.5)
6	101.3	96.5	87.6 (273.5)	38.1 (21.3)

7	231.1	140	217.4 (505.7)	81.6 (82.8)
8	131.6	125	117.9 (311.5)	66.6 (43.5)
9	61.5	106.3	47.8 (185.6)	47.9 (59.9)
10	73	78.7	59.3 (121.8)	20.3 (25.2)
11	37.8	75.4	24.1 (106.4)	17.0 (27.9)
12	68.4	78.4	54.7 (218.8)	20.0 (33.4)
13	107.8	62.8	94.1 (330.3)	4.4 (4.9)
14	86.3	59.4	72.6 (333.0)	1.0 (0.9)
15	40.3	69.3	26.6 (142.9)	10.9 (27.9)
16	120.9	76.4	107.2 (332.5)	18.0 (17.1)
17	146.2	139.3	132.5 (400.6)	80.9 (109.2)
18	64.5	159	50.8 (190.5)	100.6 (108.6)
19	59.5	132.4	45.8 (113.3)	74.0 (41.3)
20	31.5	140.7	17.8 (31.6)	82.3 (51.2)
21	42.1	109	28.4 (78.7)	50.6 (25.0)

22	29.7	95.1	16.0 (24.9)	36.7 (18.0)
23	26.5	89.3	12.8 (20.6)	30.9 (14.9)
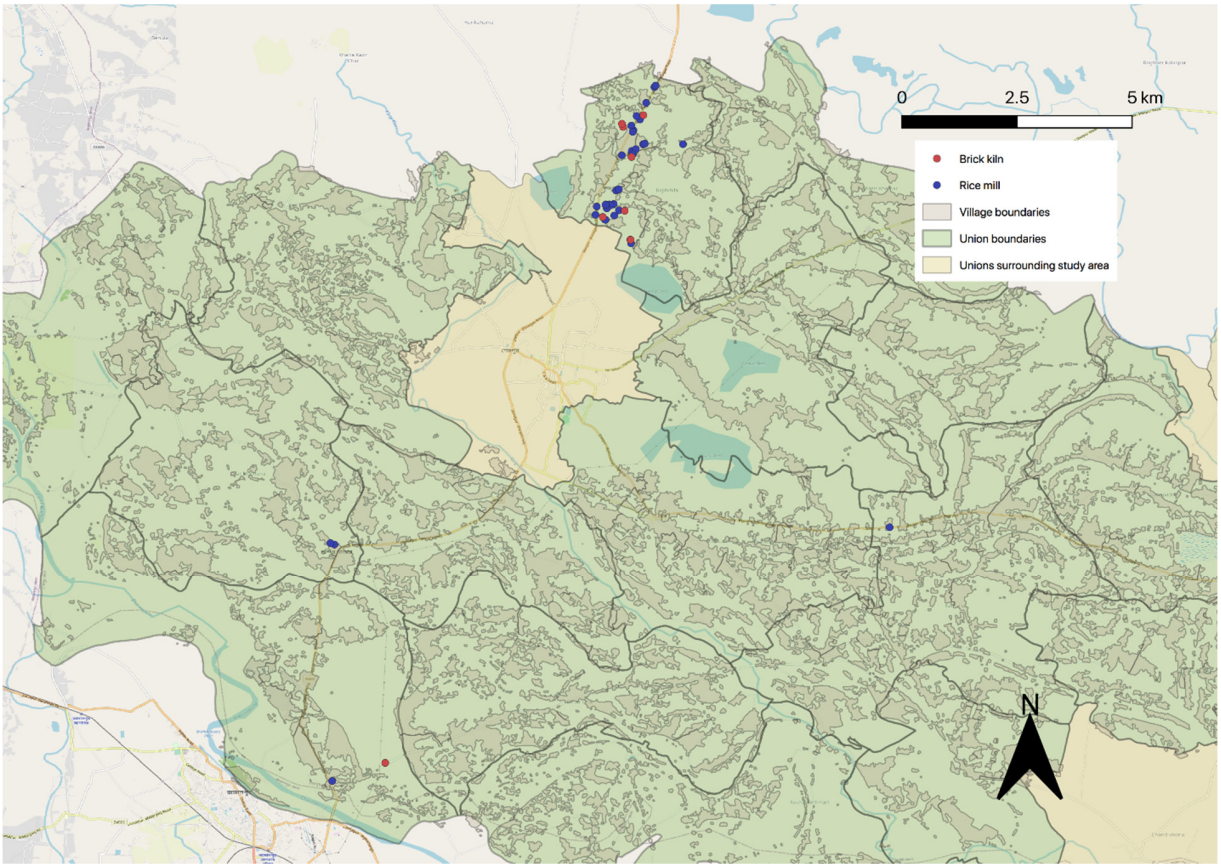
Figure S1. Location of rice mills and brick kilns within the study area that were in operation during the LPG cookstove intervention phase.