Supplementary

BOX: Scoring of respiratory questionnaire

Any respiratory symptom: Yes/No

Yes, if any of the six main symptoms namely 'cough', 'phlegm', 'breathlessness', 'wheezing/whistling', 'wheezing/whistling with breathlessness', and 'woken up due to shortness of breath' were answered 'yes'

High grade symptom: Yes/No

If "Yes" to any of the following

(1) cough on most days for as much as 3 months each year

(2) bring up phlegm on most days for as much as 3 months each year,

(3) In the past 3 years had a period of (increased) cough and phlegm lasting for 3 weeks or more

(4) have to stop for breath when walking at your own pace on level ground,

(5) breathing not normal between attacks of breath with wheezing

(6) any chest illness kept away participant from his usual work as long as 7days

Respiratory symptom score: 0-13 higher scores indicating higher morbidity

A weighted composite symptom score was created using all the respiratory symptoms. The weighting was as follows; for cough and phlegm symptoms, "0" score was given if participant was not having any cough and phlegm symptoms, "1" if participant was having cough or phlegm either during day or night but not as much as 3 months in a year, "2" if participant was having cough or phlegm both during day and night but not as much as 3 months in a year, "3" if participant was having cough or phlegm either during day or night and as much as 3 months in a year; for breathlessness "0" if he had no breathlessness symptom, "1" if he had shortness of breath when hurrying on level ground, "2" if he had shortness of breath walking with other people of your own age on level ground and "3" if

he had to stop for breath when walking at your own pace on level ground; "1" grade if wheezing/whistling in last 12 months; "1" if he ever had wheezing/whistling with breathlessness, "2" if he was not normal between attacks; "1" grade if he was woken due to shortness of breath in last 12 months.

Table S1: Comparison of respiratory morbidity of present study with previous literature

Study, year (sample size)	Country	FVC (Mean, SD)	FEV1 (Mean, SD)	PEF (Mean, SD)	FEV1/FVC (%) (Mean, SD)	FEV1/ FVC < 70% (%)	FEV1 % <80% of predicted FEV1% (%)
Present study		3.3 (0.7)	2.5 (0.6)	5.5 (1.7)	74.5 (8.7)	20.2	71.3
Aweto, 2018 (70)	Nigeria	1.59 (0.64)	1.54 (0.63)	4.04 (1.88)	93.07 (6.28)	-	-
Tungu, 2014 (115)	Tanzania	3.30 (0.5)	2.60 (0.5)	-	77 (0.6)	22.6	
Al-Neaimi, 2001 (67)	United Arab Emirates	3.17 (SE 0.08)	2.59 (0.07)	5.19 (0.23)	81.78 (1.11)	-	-
Rachiotis, 2018 (137)	Greece	-	-	-	-	4.4	13.9
Rafeemanesh, 2015 (100)	Iran	-	-	-	-	-	-
Aminian, 2014 (100) **Pre-shift** **Post-shift**	Iran	4.73 (0.69) 4.66 (0.68)	3.78 (0.62) 3.68 (0.60)	9.51 (1.50) 9.05 (1.42)	79.79 (6.18) 79.09 (6.16)	-	-
Meo, 2013 **<5 work experience-(10)** **>5 to <10(10)** **>10- 30**	Pakistan	3.40 (SEM 0.33) 3.11 (0.22) 3.13 (0.14)	2.86 (0.29) 2.61 (0.22) 2.41 (0.11)	5.22 (0.59) 5.31 (0.74) 4.72 (0.41)	84.8 (3.29) 85.50 (5.96) 79.00 (3.01)	-	-
Kakooei, 2012 (94)	Iran	3.86	3.10	-	79	40.4	48.9
Zeleke, 2011 **2009** **Cleaners (38)** **Production (33)** **2010** **Cleaners (38)** **Production (33)**	Ethiopia	4.05 (0.69) 3.82(0.58) 4.01(0.65) 3.79(0.53)	3.46(0.67) 3.23(0.55) 3.36(0.65) 3.19(0.57)	-	85.19(6.3) 84.17(5.96) 83.49(7.5) 82.36(6.58)	-	

Table S2: Association of cement exposure with lung function and respiratory morbidity (Base group - Outdoor un-exposed)

Outcomes	Groups	Mean Difference (95% CI), P value	
		Unadjusted MD	**Adjusted* MD**
FVC (Liters)	Outdoor un-exposed Indoor un-exposed Cement exposed	1 -0.17 (-0.44, 0.09) -0.32 (--0.55, -0.09) **0.02**	1 -0.16 (-0.40, 0.09) -0.01 (-0.33, 0.13) 0.45
FEV1 (Litres in 1 second)	Outdoor un-exposed Indoor un-exposed Cement exposed	1 -0.09 (-0.34, 0.15) -0.39 (-0.61, -0.18) **<0.001**	1 0.07 (-0.29, 0.15) -0.15 (-0.35, 0.05) 0.33
PEF (Litres/sec)	Outdoor un-exposed Indoor un-exposed Cement exposed	1 -0.18 (-0.87, 0.51) 1.29 (-1.88, -0.69) **<0.001**	1 -0.58 (-0.74, 0.62) -0.81 (-1.44, -0.19) **0.01**
FEV1/FVC	Outdoor un-exposed Indoor un-exposed Cement exposed	1 1.35(-2.02, 4.73) -4.64 (-7.57, -1.70) **<0.001**	1 1.75 (-1.54, 5.05) -2.11 (-5.14, 0.92) **0.03**
		Rate ratio** (95% CI), P value	
Respiratory symptom score (0-13)	Outdoor un-exposed Indoor un-exposed Cement exposed	1 0.89 (0.54, 1.46) 2.14 (1.40, 3.28) **<0.001**	1 0.90 (0.56, 1.46) 2.21 (1.48, 3.31) **<0.001**
		Odds Ratio (95% CI), P value	
FEV1/FVC <0.70	Outdoor un-exposed Indoor un-exposed Cement exposed	1 0.56 (0.13, 2.49) 2.13 (0.74, 6.11) 0.07	1 0.43 (0.09, 2.14) 1.09 (0.33, 3.61) 0.41
FEV1 <80% of PredFEV1	Outdoor un-exposed Indoor un-exposed Cement exposed	1 1.47 (0.65, 3.36) 2.00 (0.97, 4.15) 0.17	1 1.61 (0.66, 3.92) 1.53 (0.67, 3.48) 0.50
Any respiratory symptom	Outdoor un-exposed Indoor un-exposed Cement exposed	1 0.79 (0.36, 1.72) 5.67 (2.57, 12.52) **<0.001**	1 0.72 (0.32, 1.65) 5.34 (2.27, 12.59) **<0.001**
Any high grade respiratory symptom	Outdoor un-exposed Indoor un-exposed Cement exposed	1 1 (0.38, 2.66) 3.12 (1.60, 7.87) **<0.001**	1 0.89 (0.33, 2.45) 3.07 (1.30, 7.24) **0.003**

Adjusted for age, BMI, smoking, SES, and years of exposure
** Zero-inflated Negative Binomial Regression

Table S3: Risk factors of Lung functions

Mean difference	FVC (Litres)		FEV1(Litres in 1 second)		PEF(Litres/sec)		FEV1/FVC	
	Un-adjusted (95%CI), P value	Adjusted (95%CI), P value	Un-adjusted (95%CI), P value	Adjusted (95%CI), P value	Un-adjusted (95%CI), P value	Adjusted (95%CI), P value	Un-adjusted (95%CI), P value	Adjusted (95%CI), P value
Exposure **Indoor** **Outdoor** **Cement**	1 0.17 (-0.09, 0.44) -0.14 (-0.37, 0.08) **0.02**	1 0.16 (-0.09, 0.40) 0.06 (-0.16, 0.28) 0.45	1 0.09 (-0.15, 0.34) -0.30 (-0.51, -0.09) **<0.001**	1 0.07 (-0.15, 0.29) -0.09 (-0.28, 0.11) 0.33	1 0.18 (-0.51, 0.87) -1.11 (-1.70, -0.52) **<0.001**	1 0.58 (-0.62, 0.74) -0.75 (-1.36, -0.15) **0.01**	1 -1.35(-4.73, 2.02) -5.99 (-8.91, -3.08) **<0.001**	1 -1.75 (-5.05, 1.54) -3.87 (-6.77, -0.96) **0.03**
Age (yrs.)	-0.03 (-0.03, -0.02) **<0.001**	-0.02 (-0.04, -0.01) **<0.001**	-0.03 (-0.04, -0.02) **<0.001**	-0.02 (-0.03, -0.012) **<0.001**	-0.05 (-0.07, -0.03) **<0.01**	-0.03 (-0.06, 0.01) 0.12	-0.30 (-0.40, -0.21) **<0.001**	-0.19 (-0.35, -0.02) **0.03**
BMI (kg/m^2)	-0.04 (-0.06, -0.01) **0.01**	-0.03 (-0.02, 0.002) 0.07	-0.04 (-0.06, -0.01) **0.01**	-0.03 (-0.05, -0.001) **0.04**	-0.001 (-0.08, 0.76) 0.97	0.03 (-0.05, 0.10) 0.51	-0.24 (-0.061, 0.14) 0.21	-0.12 (-0.49, 0.24) 0.50
Smoking **Never** **Former** **Current**	1 -0.05 (-0.5, 0.4) -0.01 (-0.21, 0.2) 0.98	1 0.06 (-0.35, 0.47) -0.04 (-0.26, 0.15) 0.87	1 -0.10 (-0.53, 0.33) -0.04 (-0.24, 0.16) 0.85	1 0.03 (-0.34, 0.39) -0.07 (-0.24, 0.10) 0.72	1 0.31 (-0.91, 1.54) -0.08 (-0.64, 0.47) 0.82	1 0.62 (-0.51, 1.75) -0.15 (-0.67, 0.37) 0.42	1 -2.46 (-8.48, 3.50) -0.85 (-3.57, 1.86) 0.63	1 -0.84 (-6.31, 4.63) -0.85 (-3.37, 1.66) 0.79
SES score	0.08 (0.02, 0.13 **0.01**	0.04 (-0.02, 0.10) 0.17	0.10 (0.05, 0.16) **<0.001**	0.06 (0.004, 0.11 **0.04**	0.30 (0.16, 0.45) **<0.001**	0.15 (-0.01, 0.31) 0.07	1.34 (0.62, 2.07) **<0.001**	0.72 (-0.05, 1.49) 0.07
Years of working	-0.02 (-0.03, -0.01) **<0.001**	0.002 (-0.01, 0.01) 0.77	-0.03 (-0.03, -.02) **<0.001**	-0.0004 (-0.01, 0.01) 0.95	-0.05 (-0.07, -0.03) **<0.001**	-0.02 (-0.05, 0.02) 0.33	-0.27 (-0.38, -0.16) **<0.001**	-0.06 (-0.23, 0.12) 0.53

Adjusted for age, BMI, smoking, SES, and years of exposure

Table S4: Risk factors of respiratory symptoms

	Any respiratory symptom		Any high grade respiratory symptom		Respiratory symptom score	
	Un-adjusted OR (95% CI), P value	Adjusted OR (95% CI), P value	Un-adjusted OR (95% CI), P value	Adjusted OR (95% CI) , P value	Un-adjusted RR** (95% CI) , P value	Adjusted RR** (95% CI) , P value
Exposure **Indoor** **Outdoor** **Cement**	1 1.27 (0.58, 2.78) 7.21 (3.26, 15.93) **<0.001**	1 1.38 (0.60, 3.16) 7.38 (3.21, 17.00) **<0.001**	1 1 (0.36, 2.66) 3.55 (1.60, 7.87) **<0.001**	1 1.13 (0.41, 3.10) 3.46 (1.49, 8.00) **0.003**	1 1.13 (0.69, 1.85) 2.41 (1.57, 3.70) **<0.001**	1 1.11 (0.69, 1.79) 2.45 (1.63, 3.69) **<0.001**
Age (yrs.)	1.03 (1, 1.05) 0.07	1 (0.95, 1.04) 0.86	1.03 (1, 1.05) **0.03**	1.01 (0.97, 1.06) 0.50	1.01 (1, 1.03) **0.06**	1 (0.98, 1.02) 0.70
BMI (kg/m²)	1.0 (0.92, 1.10) 0.97	0.98 (0.89, 1.09) 0.74	1.04 (0.95, 1.13) 0.44	1.01 (0.91, 1.12) 0.86	1.0 (0.96, 1.05) 0.85	0.99 (0.95, 1.04) 0.77
Smoking **Never** **Former** **Current**	1 1.61 (0.32, 8.10) 0.82 (0.44, 1.54) 0.66	1 1.70 (0.30, 9.72) 0.80 (0.39, 1.65) 0.65	1 0.49 (0.10, 2.44) 0.67 (0.35, 1.28) 0.36	1 0.45 (0.08, 2.46) 0.66 (0.33, 1.33) 0.38	1 0.55 (0.29, 1.04) 0.80 (0.57, 1.14) 0.33	1 0.64 (0.32, 1.28) 0.70 (0.51, 0.98) 0.28
SES score	0.84 (0.70, 1) 0.06	1 (0.81, 1.24) 0.98	0.88 (0.73, 1.06) 0.17	1.04 (0.83, 1.29) 0.75	0.89 (0.81, 0.98) **0.02**	0.92 (0.83, 1.02) 0.13
Years of working	1.02 (1, 1.06) 0.10	1.02 (0.97, 1.06) 0.53	1.03 (1, 1.05) 0.07	1.01 (0.96, 1.05) 0.75	1.01 (0.99, 1.02) 0.37	0.99 (0.97, 1.01) 0.37

Adjusted for age, BMI, smoking, SES, and years of exposure

*** Zero-inflated Negative Binomial Regression*

Figure S1: Prevalence of all Respiratory Symptoms (as recorded using BMRC-questionnaire)

Prevalence of Respiratory Symptoms (%)

Symptom	Cement exposed	Oudoor un-exposed	Indoor un-exposed
Cough morning	69	24	22
Cough day/night	57	20	14
Cough 3 Months	39	6	4
Phlegm morning	50	26	24
Phlegm day/night	41	14	16
Phlegm 3 Months	26	8	8
Cough/phlegm >3 weeks	23	12	10
Breathlessness grade 1	58	34	32
Breathlessness grade 2	30	10	4
Breathlessness grade 3	13	4	2
Wheezing/Whistling	35	12	8
Breathlessness with wheezing	24	12	8
Woken due to breathlessness	18	6	6
Chest illness	16	2	2

■ Cement exposed   ■ Oudoor un-exposed   ■ Indoor un-exposed