Additional file 1 Table S1: Univariate analyses of the degree of dwelling overcrowding by UN HABITAT definition, acute respiratory and gastrointestinal symptoms, fever/chills among the study participants in the study sites

	Acute respiratory symptoms								
	Wet cough			**Dry Cough**			**Runny/blocked nose**		
	Crude OR	**(95% CI)**	**p-value**	**Crude OR**	**(95% CI)**	**p-value**	**Crude OR**	**(95% CI)**	**p-value**
Dwelling overcrowding									
Not overcrowded	1	1	1	1	1	1	1	1	1
Moderately overcrowded	2.86	2.12 – 3.84	<0.001	2.47	1.85 – 3.31	<0.001	2.29	1.74 – 2.86	<0.001
Extremely overcrowded	3.57	2.35 – 5.41	< 0.001	3.76	2.56 – 5.60	<0.001	3.07	2.15 – 4.39	<0.001

	Acute gastrointestinal symptoms					
	Diarrhoea			**Vomiting**		
	Crude OR	**(95% CI)**	**p-value**	**Crude OR**	**(95% CI)**	**p-value**
Dwelling overcrowding						
Not overcrowded	1	1	1	1	1	1
Moderately overcrowded	1.20	0.73 – 1.98	0.48	0.87	0.55 – 1.36	0.540
Extremely overcrowded	2.13	1.07 – 4.28	0.03	1.21	0.60 – 2.46	0.591

	Fever/Chills		
	Crude OR	**(95% CI)**	**p-value**
Dwelling overcrowding			
Not overcrowded	1	1	1
Moderately overcrowded	2.42	1.85 – 3.16	< 0.001
Extremely overcrowded	3.08	2.09 – 4.53	<0.001

	Acute respiratory symptoms								
	Wet cough[a]			**Dry Cough[b]**			**Runny/blocked nose[c]**		
	Adjusted OR	**(95% CI)**	**p-value**	**Adjusted OR**	**(95% CI)**	**p-value**	**Adjusted OR**	**(95% CI)**	**p-value**
Dwelling overcrowding									
Not overcrowded	1	1	1	1	1	1	1	1	1
Moderately overcrowded	**1.87**	**1.32 – 2.63**	**<0.001**	**1.54**	**1.11 – 2.11**	**0.009**	**1.34**	**1.01 – 1.77**	**0.046**
Extremely overcrowded	**1.96**	**1.19 – 3.22**	**0.008**	**1.94**	**1.19 – 3.16**	**0.008**	**1.59**	**1.05 – 2.41**	**0.028**

	Acute gastrointestinal symptoms					
	Diarrhoea[d]			**Vomiting[e]**		
	Adjusted OR	**(95% CI)**	**p-value**	**Adjusted OR**	**(95% CI)**	**p-value**
Dwelling overcrowding						
Not overcrowded	1	1	1	1	1	1
Moderately overcrowded	1.19	0.68 – 2.08	0.42	0.90	0.52 – 1.55	0.700
Extremely overcrowded	**2.57**	**1.15 – 5.75**	**0.022**	1.49	0.65 – 3.21	0.361

	Fever/Chills[f]		
	Adjusted OR	**(95% CI)**	**p-value**
Dwelling overcrowding			
Not overcrowded	1	1	1
Moderately overcrowded	**1.49**	**1.08 – 2.05**	**0.015**
Extremely overcrowded	**1.60**	**1.01 – 2.52**	**0.044**

[a-f]: Models adjusted for sex, study area, head of the household education level, whether any member of the household smoke at home, household total monthly income, having children under the age of five in the household, and period of residence in the current dwelling

Table S2: Multiple regression analysis of dwelling overcrowding and wet cough among the participants

Wet cough	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	1.20144	.9068403	1.591744	0.201
Area				
Braamfischerville	1	1		1
Riverlea	1.007767	.5824505	1.743656	0.978
Population group				
Black	1	1		1
Coloured	1.117713	.653123	1.912783	0.684
Children under the age of 5 at home				
No	1	1		1
Yes	**4.879651**	**3.451418**	**6.898901**	**0.000**
Any member of the household smoke at home				
No	1	1		1
Yes	**3.046566**	**2.300439**	**4.034692**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	1.230098	.9271645	1.632009	0.151
Level of education (head of household)				
None	1	1		1
Primary	**.5640214**	**.3412105**	**.9323282**	**0.026**
Secondary	**.4557652**	**.2853819**	**.7278734**	**0.001**
Tertiary	.8510785	.4870199	1.487279	0.571
Household total monthly income				
No income	1	1		1
R1001 – R5000	.9226285	.6613441	1.287141	0.635
R5001 – R 10000	1.186336	.7523659	1.870623	0.462
> R10000	.560834	.3079859	1.021263	0.059

Table S3: Multiple regression analysis of dwelling overcrowding and dry cough among the participants

Dry cough	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	1.169817	.874459	1.564937	0.290
Area				
Braamfischerville	1	1		1
Riverlea	1.392484	.7925502	2.446548	0.249
Population group				
Black	1	1		1
Coloured	1.05534	.6040912	1.843666	0.850
Children under the age of 5 at home				
No	1	1		1
Yes	**6.490475**	**4.588541**	**9.180753**	**0.000**
Any member of the household smoke at home				
No	1	1		1
Yes	**2.816794**	**2.14014**	**3.707388**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	1.25981	.9191733	1.726684	0.151
Level of education (head of household)				
None	1	1		1
Primary	.8556767	.504724	1.450659	0.562
Secondary	.7028449	.4234681	1.166536	0.172
Tertiary	.7226168	.3706571	1.408782	0.340
Household total monthly income				
No income	1	1		1
R1001 – R5000	.916813	.6503999	1.292353	0.620
R5001 – R 10000	1.176011	.7131442	1.939302	0.525
> R10000	.9804907	.5635769	1.705822	0.944

Table S4: Multiple regression analysis of dwelling overcrowding and runny/blocked nose among the participants

Runny/blocked nose	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	.9432128	.7376888	1.205997	0.641
Area				
Braamfischerville	1	1		1
Riverlea	1.08782	.6748097	1.75361	0.729
Population group				
Black	1	1		1
Coloured	1.189742	.7514507	1.883671	0.458
Children under the age of 5 at home				
No	1	1		1
Yes	**5.875143**	**4.298368**	**8.030326**	**0.000**
Any member of the household smoke at home				
No	1	1		1
Yes	**3.625663**	**2.808236**	**4.68103**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	**1.361516**	**1.057913**	**1.752248**	**0.017**
Level of education (head of household)				
None	1	1		1
Primary	.8344232	.50358	1.382625	0.482
Secondary	.8202597	.5089384	1.322019	0.415
Tertiary	.9434359	.5002835	1.779134	0.857
Household total monthly income				
No income	1	1		1
R1001 – R5000	.7531663	.5572692	1.017927	0.065
R5001 – R 10000	1.137402	.7610645	1.699833	0.530
> R10000	.6736444	.4010972	1.131388	0.135

Table S5: Multiple regression analysis of dwelling overcrowding and diarrhea among the participants

Diarrhea	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	1.091632	.6547307	1.820078	0.736
Area				
Braamfischerville	1	1		1
Riverlea	1.53905	.5929695	3.994598	0.375
Population group				
Black	1	1		1
Coloured	.5997331	.243016	1.480066	0.267
Children under the age of 5 at home				
No	1	1		1
Yes	.8921037	.5163954	1.541162	0.682
Any member of the household smoke at home				
No	1	1		1
Yes	**3.486174**	**2.113756**	**5.749674**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	**1.684246**	**1.037618**	**2.733844**	**0.035**
Level of education (head of household)				
None	1	1		1
Primary	7427881	.2637554	2.09184	0.573
Secondary	.7146512	.2756568	1.852762	0.489
Tertiary	.976576	.3069503	3.10702	0.968
Household total monthly income				
No income	1	1		1
R1001 – R5000	1.14517	.5894462	2.224825	0.689
R5001 – R 10000	**2.490549**	**1.122957**	**5.523661**	**0.025**
> R10000	1.662535	.7019602	3.937576	0.248

Table S6: Multiple regression analysis of dwelling overcrowding and vomiting among the participants

Vomiting	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	1.204849	.7504186	1.934468	0.440
Area				
Braamfischerville	1	1		1
Riverlea	.5042892	.2445754	1.039792	0.064
Population group				
Black	1	1		1
Coloured	1.925253	.9082394	4.081081	0.087
Children under the age of 5 at home				
No	1	1		1
Yes	1.049715	.6284873	1.75326	0.853
Any member of the household smoke at home				
No	1	1		1
Yes	**6.438798**	**3.715197**	**11.15906**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	1.096688	6810664	1.765943	0.704
Level of education (head of household)				
None	1	1		1
Primary	.4988343	.2186428	1.138093	0.098
Secondary	**.4177079**	**.198351**	**.8796525**	**0.022**
Tertiary	.3822879	.1331692	1.097431	0.074
Household total monthly income				
No income	1	1		1
R1001 – R5000	1.245162	.7129501	2.174666	0.440
R5001 – R 10000	1.437102	.6299547	3.278428	0.388
> R10000	**2.482852**	**1.189805**	**5.181143**	**0.015**

Table S6: Multiple regression analysis of dwelling overcrowding and fever/chills among the participants

Fever/Chills	Odds ratio	95 % CI		P-value
Sex				
Female	1	1		1
Male	1.204849	.7504186	1.934468	0.440
Area				
Braamfischerville	1	1		1
Riverlea	.5042892	.2445754	1.039792	0.064
Population group				
Black	1	1		1
Coloured	1.925253	.9082394	4.081081	0.087
Children under the age of 5 at home				
No	1	1		1
Yes	1.049715	.6284873	1.75326	0.853
Any member of the household smoke at home				
No	1	1		1
Yes	**6.438798**	**3.715197**	**11.15906**	**0.000**
Period of residence in the area				
< 10 years	1	1		1
> 10 years	1.096688	.6810664	1.765943	0.704
Level of education (head of household)				
None	1	1		1
Primary	.4988343	.2186428	1.138093	0.098
Secondary	**.4177079**	**.198351**	**.8796525**	**0.022**
Tertiary	.3822879	.1331692	1.097431	0.074
Household total monthly income				
No income	1	1		1
R1001 – R5000	1.245162	.7129501	2.174666	0.440
R5001 – R 10000	1.437102	.6299547	3.278428	0.388
> R10000	**2.482852**	**1.189805**	**5.181143**	**0.015**