

Reduced lung function due to biomass smoke exposure in young adults in rural Nepal

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Online Data Supplement

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Table S1: Mean absolute values of lung function indices (95% CI) in lifelong non-smoking, biomass and non-biomass users, stratified by sex and age bands

Age, years	Mean FEV ₁ , L (95% CI)			Mean FVC, L (95% CI)			Mean FEF ₂₅₋₇₅ , L/s (95% CI)			Mean FEV ₁ /FVC, % (95% CI)		
	Biomass	Non-biomass	p-value	Biomass	Non-biomass	p-value	Biomass	Non-biomass	p-value	Biomass	Non-biomass	p-value
Men												
16-25	3.06 (2.95, 3.17) n=119	3.34 (3.24, 3.45) n=96	<0.001	3.71 (3.59, 3.83) n=119	3.89 (3.77, 4.02) n=96	0.037	3.24 (3.03, 3.45) n=119	3.83 (3.60, 4.05) n=96	<0.001	82.64 (81.16, 84.11) n=119	86.03 (84.81, 87.25) n=96	<0.001
26-35	2.90 (2.76, 3.03) n=76	3.19 (3.06, 3.32) n=87	0.002	3.66 (3.50, 3.81) n=76	3.89 (3.74, 4.03) n=87	0.031	2.78 (2.54, 3.01) n=76	3.37 (3.12, 3.62) n=87	<0.001	79.31 (77.57, 81.04) n=76	82.10 (80.72, 83.49) n=87	0.012
36-45	2.70 (2.50, 2.90) n=45	2.77 (2.64, 2.91) n=58	0.531	3.56 (3.32, 3.80) n=45	3.55 (3.39, 3.70) n=58	0.911	2.45 (2.13, 2.77) n=45	2.66 (2.38, 2.95) n=58	0.327	75.92 (73.15, 78.69) n=45	78.20 (76.24, 80.16) n=58	0.167
46-55	2.10 (1.88, 2.32) n=34	2.41 (2.20, 2.62) n=47	0.044	3.00 (2.78, 3.21) n=34	3.22 (3.01, 3.44) n=47	0.152	1.49 (1.23, 1.75) n=34	2.09 (1.76, 2.42) n=47	0.008	68.90 (64.80, 72.99) n=34	74.01 (70.77, 77.26) n=47	0.048
>55	1.68 (1.49, 1.86) n=52	1.86 (1.68, 2.04) n=42	0.172	2.57 (2.33, 2.81) n=52	2.62 (2.44, 2.81) n=42	0.734	1.07 (0.89, 1.26) n=52	1.40 (1.14, 1.66) n=42	0.038	64.54 (61.10, 67.98) n=52	69.75 (66.00, 73.50) n=42	0.042
Women												
16-25	2.29 (2.21, 2.38) n=134	2.43 (2.36, 2.50) n=127	0.014	2.74 (2.65, 2.83) n=134	2.80 (2.73, 2.88) n=127	0.305	2.65 (2.48, 2.81) n=134	3.01 (2.85, 3.18) n=127	0.002	83.84 (82.47, 85.21) n=134	86.75 (85.62, 87.87) n=127	0.001
26-35	2.10 (2.01, 2.20) n=83	2.33 (2.24, 2.41) n=91	<0.001	2.70 (2.58, 2.82) n=83	2.85 (2.75, 2.96) n=91	0.048	1.99 (1.83, 2.16) n=83	2.58 (2.38, 2.77) n=91	<0.001	78.14 (76.36, 79.92) n=83	81.72 (80.37, 83.07) n=91	0.001
36-45	1.75 (1.66, 1.85) n=70	2.01 (1.91, 2.10) n=57	<0.001	2.36 (2.24, 2.48) n=70	2.51 (2.40, 2.63) n=57	0.075	1.46 (1.66, 1.85) n=70	2.14 (1.93, 2.34) n=57	<0.001	74.42 (72.20, 76.63) n=70	80.16 (78.36, 81.97) n=57	<0.001
46-55	1.48 (1.30, 1.65) n=28	1.63 (1.52, 1.74) n=54	0.117	2.04 (1.86, 2.23) n=28	2.15 (2.03, 2.28) n=54	0.316	1.15 (0.90, 1.40) n=28	1.47 (1.27, 1.67) n=54	0.050	71.90 (67.74, 76.05) n=28	74.42 (72.99, 77.84) n=54	0.117
>55	1.12 (0.99, 1.25) n=54	1.33 (1.17, 1.48) n=38	0.047	1.66 (1.48, 1.83) n=54	1.85 (1.68, 2.01) n=38	0.126	0.83 (0.65, 1.02) n=54	1.14 (0.88, 1.40) n=38	0.045	67.39 (63.31, 71.47) n=54	71.47 (66.47, 76.47) n=38	0.203

Table S2 Prevalence of airflow obstruction in biomass and non-biomass using Nepalese adults according to different definitions

	Biomass		Non-biomass		p-value
	n	n (%) with AFO	n	n (%) with AFO	
		FEV ₁ /FVC < lower limit of normal			
Men	326	24 (7.4)	330	11 (3.3)	0.022
Women	369	40 (10.8)	367	14 (3.8)	<0.001
All	695	64 (8.1)	697	25 (3.6)	<0.001
		FEV ₁ /FVC < 70%			
Men	326	69 (21.2)	330	41 (12.4)	0.003
Women	369	70 (19.0)	367	35 (9.5)	<0.001
All	695	139 (20.0)	697	76 (10.9)	<0.001

AFO: airflow obstruction

Table S3 Effect of interaction between exposure to biomass smoke and smoking status on lung function indices

	FEV ₁	FVC	FEF ₂₅₋₇₅	AFO
	Men			
Ever smoker and biomass use				
RERI (95% CI)	0.129 (-0.026, 0.284)	0.116 (-0.076, 0.309)	0.251 (0.029, 0.473)	-2.574 (-9.976, 4.827)
AP (95% CI)	0.150 (-0.027, 0.328)	0.114 (-0.070, 0.299)	0.425 (0.046, 0.804)	-0.539 (-2.027, 0.950)
S (95% CI)	0.524 (0.240, 1.144)	-0.185 (N/A*)	0.620 (0.422, 0.912)	0.595 (0.184, 1.926)
Ex-smoker and biomass use				
RERI (95% CI)	0.076 (-0.146, 0.299)	0.009 (-0.243, 0.261)	0.188 (-0.182, 0.558)	-0.444 (-6.267, 5.379)
AP (95% CI)	0.098 (-0.175, 0.371)	0.011 (-0.304, 0.326)	0.286 (-0.215, 0.787)	-0.102 (-1.519, 1.314)
S (95% CI)	0.745 (0.308, 1.804)	0.958 (0.285, 3.226)	0.645 (0.261, 1.595)	0.883 (0.169, 4.613)
Current smoker and biomass use				
RERI (95% CI)	0.085 (-0.104, 0.274)	0.058 (-0.179, 0.295)	0.235 (-0.479, 0.948)	-0.885 (-3.644, 1.874)
AP (95% CI)	0.093 (-0.111, 0.296)	0.053 (-0.161, 0.267)	0.372 (-0.757, 1.501)	-0.551 (-2.308, 1.207)
S (95% CI)	0.502 (0.112, 2.260)	2.601 (0.005, 1408.769)	0.612 (0.183, 2.045)	0.407 (0.033, 4.959)
	Women			
Ever smoker and biomass use				
RERI (95% CI)	0.042 (-0.115, 0.200)	-0.001 (-0.209, 0.207)	0.081 (-0.194, 0.356)	-2.695 (-8.567, 3.176)
AP (95% CI)	0.049 (-0.132, 0.231)	-0.001 (-0.209, 0.208)	0.135 (-0.322, 0.591)	-0.602 (-1.997, 0.793)
S (95% CI)	0.763 (0.305, 1.910)	1.847 (0.00, 3.1×10 ¹⁰⁹)	0.831 (0.466, 1.483)	0.563 (0.194, 1.635)
Ex-smoker and biomass use				
RERI (95% CI)	0.127 (-0.082, 0.336)	0.077 (-0.181, 0.335)	0.172 (-0.222, 0.565)	-1.669 (-5.666, 2.328)
AP (95% CI)	0.136 (-0.081, 0.353)	0.077 (-0.176, 0.331)	0.230 (-0.279, 0.739)	-0.671 (-2.552, 1.209)
S (95% CI)	0.342 (0.045, 2.586)	0.051 (0.00, 5.74×10 ¹⁵)	0.597 (0.200, 1.776)	0.471 (0.083, 2.677)
Current smoker and biomass use				
RERI (95% CI)	-0.027 (-0.267, 0.213)	-0.144 (-0.479, 0.192)	0.053 (-0.353, 0.458)	-4.102 (-13.630, 5.426)
AP (95% CI)	-0.032 (-0.317, 0.253)	-0.146 (-0.489, 0.198)	0.091 (-0.614, 0.797)	-1.040 (-3.606, 1.525)
S (95% CI)	1.212 (0.187, 7.872)	-0.101 (N/A*)	0.890 (0.380, 2.087)	0.418 (0.092, 1.906)

AFO: airflow obstruction; RERI: Relative excess risk due to interaction; AP: Attributable proportion due to interaction; S: Synergy index

* 95% CI could not be calculated

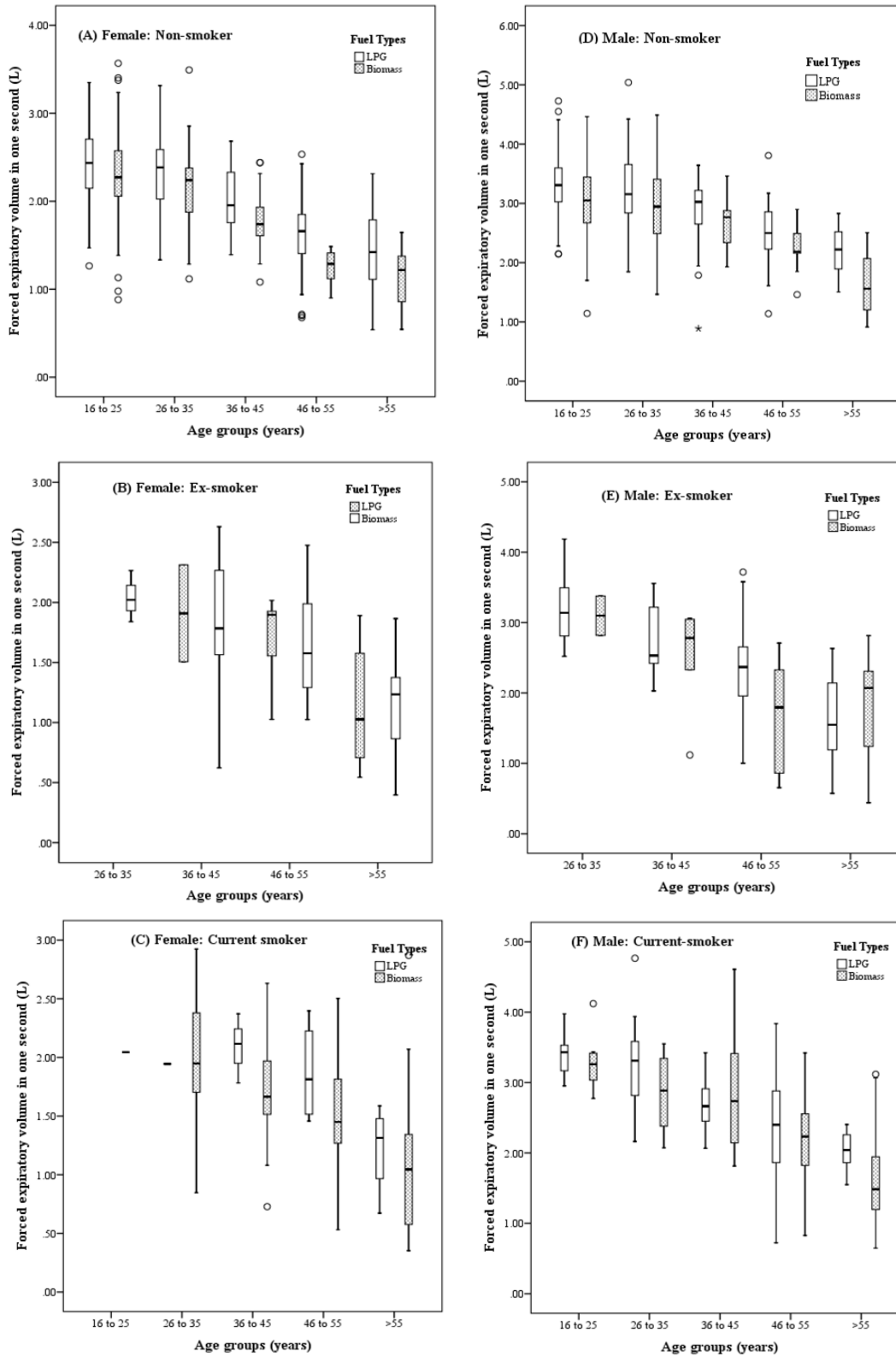


FIGURE S1: BOX PLOTS SHOWING FORCED EXPIRATORY VOLUME IN ONE SECOND WITH DIFFERENT AGE GROUPS CLUSTERED FOR FUEL TYPES (LPG “LIQUEFIED PETROLEUM GAS” AND BIOMASS). THE TWO COLUMNS SHOW BOX PLOTS FOR FEMALE AND MALE WHEREAS THE THREE ROWS SHOW BOX PLOT FOR NON-SMOKER, EX-SMOKER AND CURRENT SMOKER.