

Table 1—Health Characteristics of e-waste recyclers and non-e-waste recyclers in Accra-Ghana

	E-waste Recyclers Mean ± SE	Non-E-waste Recyclers Mean ± SE	T-test	P-value
Blood pressure at Wave I				
Systolic Pressure	123.06 ± 1.03	128.57 ± 2.12	-2.63	0.01
Diastolic Pressure	73.61 ± 0.83	76.46 ± 1.50	-1.79	0.07
Pulse Pressure	49.46 ± 0.94	52.11 ± 1.24	-1.63	0.11
Arterial Pressure	90.09 ± 0.79	93.83 ± 1.63	-2.33	0.02
Heart rate	73.69 ± 0.97	74.38 ± 1.64	-0.38	0.70
Blood pressure at Wave II				
Systolic Pressure	119.85 ± 1.03	127.00 ± 2.45	-3.17	0.002
Diastolic Pressure	72.19 ± 0.82	75.52 ± 1.77	-1.96	0.05
Pulse Pressure	47.67 ± 1.08	51.48 ± 1.53	-2.00	0.04
Arterial Pressure	88.07 ± 0.74	92.68 ± 1.89	-2.74	0.01
Heart rate	73.44 ± 1.14	69.36 ± 1.54	2.06	0.04
Blood pressure at Wave III				
Systolic Pressure	119.62 ± 1.38	129.13 ± 2.99	-3.31	0.001
Diastolic Pressure	70.90 ± 1.07	75.96 ± 1.96	-2.43	0.01
Pulse Pressure	48.71 ± 1.19	53.18 ± 1.62	-2.12	0.03
Arterial Pressure	87.14 ± 1.04	93.68 ± 2.23	-3.03	0.003
Heart rate	73.82 ± 1.05	73.62 ± 1.93	0.10	0.92
Ambient exposure (µg/m ³)				
PM _{2.5} (at Wave I)	80.39 ± 5.59	39.03 ± 2.34	4.95	<0.001
PM _{2.5} (Wave II)	70.49 ± 2.45	49.50 ± 7.23	3.43	<0.001
PM _{2.5} (Wave III)	70.49 ± 3.79	87.50 ± 14.56	-1.48	0.14
BMI				
Wave I	22.52±0.25	23.82±0.42	-2.83	0.01
Wave II	23.96±0.30	24.14±0.51	-0.32	0.76
Wave III	24.18±0.34	24.11±0.59	0.11	0.92

Note. BMI = body mass index; CI = confidence interval; PM_{2.5} = particulate matter < 2.5 micrometers in diameter in µg/m³.

Table 2: Dietary Micronutrient intake and adequacy of e-waste and non-e-waste recyclers at different time points

Micronutrient (mg)	RDA (mg)	Dietary Micronutrient Intake				% Micronutrients adequacy (= %>RDA)		
		E-waste Recycler	Non-E-waste recyclers	T-test	P-value	E-waste Recyclers	Non-E-waste recyclers	p-value
		Mean ± SD	Mean ± SD			n (%)	n (%)	
WAVE I								
Ca	1000	518.15 ± 318.26	521.68 ± 345.92	-0.07	0.95	7 (4.4)	2 (3.2)	0.57
Fe	8	26.35 ± 12.44	21.57 ± 9.85	2.70	0.004	127 (96.9)	62 (98.4)	0.18
Cu	2	1.10 ± 0.58	1.05 ± 0.63	0.55	0.59	13 (9.2)	3 (4.8)	0.28
Se	55	25.76 ± 18.74	34.87 ± 40.78	-2.16	0.10	22 (16.8)	15 (23.8)	0.24
Mg	400	46.98 ± 44.27	78.84 ± 63.13	-4.12	0.001	4(2.8)	0(0)	0.55
Zn	11	11.17 ± 4.06	9.38 ± 0.57	2.81	0.01	67(47.2)	18(28.6)	0.01
WAVE II								
Ca	1000	536.68 ± 273.46	560.80 ± 393.93	-0.39	0.70	7(6.6)	3(6.0)	0.89
Fe	8	29.10 ± 12.29	23.65 ± 10.54	2.86	0.005	111(98.2)	51(100)	0.34
Cu	2	1.10 ± 0.54	0.98 ± 0.57	1.26	0.21	7(6.6)	3(6.0)	0.89
Se	55	32.26 ± 22.35	35.25 ± 26.98	-0.66	0.51	19(16.8)	13(25.5)	0.19
Mg	400	45.99 ± 33.15	48.98 ± 37.56	-0.48	0.63	0(0)	1(2)	0.14
Zn	11	11.57 ± 4.10	9.51 ± 3.89	3.02	0.003	59(55.7)	12(24.0)	<0.001
WAVE III								
Ca	1000	539.50 ± 228.41	574.71 ± 296.07	-0.70	0.48	5(4.9)	3(6.8)	0.64
Fe	8	29.21 ± 11.28	22.49 ± 9.60	3.67	<0.001	104(99.1)	43(97.7)	0.52
Cu	2	1.16 ± 0.64	0.99 ± 0.71	1.32	0.19	12(11.8)	4(9.1)	0.64
Se	55	37.53 ± 24.94	40.05 ± 25.86	-0.51	0.61	28(26.7)	13(29.6)	0.72
Mg	400	41.58 ± 44.62	50.28 ± 40.66	-1.12	0.27	7(6.9)	2(4.6)	0.59
Zn	11	11.33 ± 3.84	9.80 ± 4.73	1.89	0.06	56(54.9)	13(29.6)	0.01

Abbreviations: Ca=Calcium; Fe= Iron; Cu= Copper; Se= Selenium; Mg= Magnesium; Zn= Zinc; RDA= Recommended Daily Allowance

Table 3: Relationship between dietary micronutrient intake (mg) and BP (mmHg)

Dietary Micronutrients (mg)	Systolic Blood Pressure (SBP) β (95% CI)	Diastolic Blood Pressure (DBP) β (95% CI)	Pulse Pressure (PP) β (95% CI)	Arterial Pressure (AP) β (95% CI)	Heart Rate (HR) β (95% CI)
Unadjusted					
Ca	-0.024*[-0.044, 0.003]	-0.001 [-0.027, 0.023]	-0.049 *[-0.091, -0.007]	-0.012(-0.033, 0.008)	-0.014[-0.049, 0.019]
Mg	0.01[-0.01, 0.02]	0.013 [-0.001, 0.027]	-0.004 [-0.027, 0.019]	0.009(-0.003, 0.020)	0.010[-0.009, 0.029]
Se	0.01 [-0.003, 0.019]	-0.001[-0.014, 0.013]	0.022[-0.0003, 0.0441]	0.003(-0.008, 0.014)	-0.007[-0.025, 0.011]
Fe	-0.03**[-0.05, -0.01]	-0.013 [-0.039, 0.013]	-0.058**[-0.101, 0.015]	-0.023*(-0.044, -0.001)	-0.003 [-0.039, 0.032]
Zn	-0.03*[-0.05, 0.01]	-0.02 [-0.05, 0.01]	-0.046[-0.094, 0.002]	-0.022(-0.005, 0.0002)	0.009[-0.030, 0.048]
Cu	0.002[-0.12, 0.02]	-0.005 [-0.023, 0.013]	0.012 [-0.017, 0.041]	-0.002(-0.016, 0.012)	0.005 [-0.019, 0.029]
Adjusted					
Ca	-0.027*[-0.054, -0.004]	-0.001[-0.035, 0.034]	-0.057*[-0.113, -0.001]	-0.014[-0.041, 0.014]	-0.048*[-0.095, -0.001]
Mg	0.005[-0.007, 0.016]	0.012[-0.003, 0.027]	-0.004[-0.028, 0.020]	0.008[-0.003, 0.020]	0.014[-0.006, 0.034]
Se	0.006[-0.005, 0.017]	-0.003[-0.018, 0.011]	0.020[-0.003, 0.043]	0.001[-0.011, 0.012]	-0.008[-0.001, 0.011]
Fe	-0.045**[-0.073, -0.016]	-0.024[-0.061, 0.014]	-0.069*[-0.130, -0.009]	-0.034*[-0.064, -0.004]	-0.046[-0.098, 0.006]
Zn	-0.026[-0.061, 0.009]	-0.027[-0.072, 0.017]	-0.030[-0.103, 0.043]	-0.027[-0.063, 0.009]	-0.023[-0.001, 0.010]
Cu	0.014(-0.003, 0.031)	-0.001[-0.023, 0.021]	0.034[-0.001, 0.070]	0.005[-0.012, 0.024]	-0.001[-0.031, 0.029]

P-value notations: $p < 0.05^*$; $p < 0.01^{**}$ Random effect adjustment was made for income, BMI, smoking status, marital status, total calories consumed, dietary diversity scores in the model.

Table 4a: Effects of dietary micronutrient intake on the association between PM_{2.5} and BP in both e-waste and non-e-waste recyclers

Variables	Systolic Blood Pressure (SBP)	Diastolic Blood Pressure (DBP)	Pulse Pressure (PP)	Arterial Pressure (AP)	Heart Rate (HR)
	β [95% CI]	β [95% CI]	β [95% CI]	β [95% CI]	β [95% CI]
PM _{2.5}	-0.033* [-0.054, -0.013]	-0.027* [-0.053, -0.002]	-0.045* [-0.088, -0.003]	-0.030* [-0.051, -0.009]	0.022[-0.014, 0.060]
Ca	-0.029[-0.066, 0.008]	-0.001[-0.036, 0.034]	-0.042[-0.101, 0.016]	-0.010[-0.039, 0.019]	-0.045[-0.095, 0.006]
PM _{2.5}	-0.032* [-0.053, -0.011]	-0.025[-0.051, 0.001]	-0.045* [-0.089, -0.002]	-0.028* [-0.049, -0.007]	0.029[-0.008, 0.065]
Mg	0.006[-0.006, 0.019]	0.016* [0.001, 0.032]	-0.007[-0.033, 0.019]	0.012[-0.001, 0.024]	0.024* [0.002, 0.047]
PM _{2.5}	-0.030* [-0.051, -0.010]	-0.026[-0.051, 0.0003]	-0.040[-0.083, 0.003]	-0.027* [-0.048, -0.007]	0.027[-0.010, 0.064]
Fe	-0.043* [-0.074, -0.012]	-0.029[-0.069, 0.010]	-0.061[-0.126, 0.005]	-0.036* [-0.068, -0.004]	-0.029[-0.086, 0.028]
PM _{2.5}	-0.029* [-0.050, -0.008]	-0.026[-0.053, 0.001]	-0.037[-0.082, 0.008]	-0.027* [-0.049, -0.005]	0.028[-0.011, 0.066]
Se	0.007[-0.005, 0.018]	-0.001[-0.016, 0.014]	0.019[-0.006, 0.043]	0.002[-0.009, 0.014]	-0.009[-0.030, 0.012]
PM _{2.5}	-0.033* [-0.054, -0.013]	-0.027* [-0.053, -0.002]	-0.045* [-0.087, -0.002]	-0.030* [-0.051, -0.009]	0.025[-0.012, 0.062]
Cu	0.017[-0.0001, 0.035]	-0.001[-0.023, 0.021]	0.043* [0.006, 0.079]	0.008[-0.010, 0.026]	-0.003[-0.034, 0.029]
PM _{2.5}	-0.031* [-0.052, -0.011]	-0.025[-0.051, 0.001]	-0.043[-0.086, 0.00004]	-0.027* [-0.048, -0.006]	0.026[-0.011, 0.064]
Zn	-0.029[-0.066, 0.008]	-0.040[-0.086, 0.007]	-0.017[-0.094, 0.060]	-0.035[-0.072, 0.003]	-0.015[-0.084, 0.053]

Random effect adjustment was made for age, income, BMI, smoking status, marital status, biomass exposure, total calories consumed, dietary diversity scores in the model.

p<0.05*, for which reason their values were boldened.