

Supplementary Material

Table S1: Calorie content, snack, and aerated drinks

S.no	Food Group	Item and Quantity	Calories
1	Fried food	Poori x 2	200
2	Fried food	Pakora 1 serving	315
3	Fried food	Vada x 2	140
4	Fried food	Samosa x 2	500
5	Fried food	Tikki x 1	200
6	Junk food	Burger x 1	300
7	Junk food	Pizza (100 gm)	300
8	Junk food	Pasta (100 gm)	131
9	Junk food	Noodle (100 gm)	138
10	Sweet	Sweet (100 gm)	500
11	Sweet	Pastries (100 gm)	551
12	Sweet	Cake (100 gm)	257
13	Aerate drinks	Aerate drinks 600 ml	280

Note: Aerated drinks such as colas, Pepsi, etc. which contain carbon dioxide as solute and water as solvent

Table S2: Energy metabolism parameter values

Parameter	Definition	Mean value+/- SD
n_f	Fat synthesis efficiency	230 kcal/kg+/-100
n_l	Protein synthesis efficiency	180 kcal/kg+/-20
p_f	Energy content per unit change in body fat	9400 kcal/kg+/-50
p_l	Energy content per unit change in lean tissue	1800 kcal/kg+/-50
c	Relative change in mean mass per change in fat mass	0.54+/-0.1
d	Adaptive thermogenesis parameter	0.24+/-0.1
Y_f	Resting metabolic rate of fat	3.6 kcal/kg/d+/-2
Y_l	Resting metabolic rate of lean tissue	22 kcal/kg/d+/-4
P	Physical activity level	1.6+/-0.2

Table S3: Frequency of consumption of various food items per week, CNNS 2016-18

Consumption	Fried food		Junk food		Sweets		Aerated Drinks	
	N	%	N	%	N	%	N	%
Occasionally/Never	10,353	63.0	14,581	88.7	13,809	84.0	14,506	88.2
1	1,963	11.9	670	4.1	1,076	6.6	604	3.7
2	1,679	10.2	554	3.4	693	4.2	524	3.2
3	983	6.0	284	1.7	302	1.8	319	1.9
4	420	2.6	140	0.9	149	0.9	128	0.8
5	153	0.9	64	0.4	72	0.4	72	0.4
6	105	0.6	19	0.1	24	0.2	27	0.2
7	788	4.8	132	0.8	319	1.9	264	1.6
Total	16,444	100	16,444	100	16,444	100	16,444	100

Table S4: Frequency of consumption of various food items (%) per week among non-overweight and overweight, CNNS 2016-18

	Non-overweight	Fried foods	Junk food	Sweets	Aerated drinks
0		62.76	88.97	84.45	88.57
1		12.2	4.01	6.43	3.66
2		10.23	3.24	4.12	3.07
3		5.92	1.69	1.73	1.86
4		2.52	0.78	0.87	0.75
5		0.91	0.38	0.45	0.41
6		0.63	0.11	0.15	0.16
7		4.83	0.81	1.79	1.53
Overweight					
0		65.35	85.02	78.15	83.94
1		8.74	4.84	7.95	3.82
2		10.03	4.84	5.35	4.59
3		6.73	2.1	3.13	3
4		2.98	1.77	1.37	1.14
5		1.14	0.57	0.24	0.81
6		0.7	0.17	0.09	0.15
7		4.33	0.69	3.72	2.56

Table S5: Estimated impact of introducing warning labels on overweight and obesity reduction, assuming 25% daily calorie reduction.

	Entire Sample			Consuming specified food items		
	Baseline (2018)	Endline (2022) Usual scenario	Endline (2022) After introducing warning labels	Baseline (2018)	Endline (2022) Usual scenario	Endline (2022) After introducing warning labels
Weight	47.1	48.5	44.7	47.8	49.2	40.8
BMI	18.9		18.0	19.1		16.3
Overweight (%)	7.59	7.59	7.66	7.7	7.7	4.7
Obese (%)	3.61	3.61	3.42	4.0	4.0	2.3
N	16444	16444	16444	7697.0	7697.0	7697.0
15-19 Population	126823000		126823000	69752650		69752650
Overweight	9625866		9714642	5384905		3271399
Obese	4578310		4337347	2776155		1618261
Change Overweight			-88776			2113505
Change obese			240964			1157894

Note: N here is unweighted N

Table S6: Estimated impact of introducing warning labels on overweight and obesity reduction, assuming a 15% daily calorie reduction.

	Entire Sample			Consuming specified food items		
	Baseline (2018)	Endline (2022) Usual scenario	Endline (2022) After introducing warning labels	Baseline (2018)	Endline (2022) Usual scenario	Endline (2022) After introducing warning labels
Weight	47.1	48.5	44.7	47.8	49.2	40.8
BMI	18.9		18.0	19.1		16.3
Overweight (%)	7.59	7.59	8.27	7.7	7.7	6.1
Obese (%)	3.61	3.61	3.89	4.0	4.0	3.4
N	16444	16444	16444	7697.0	7697.0	7697.0
15-19 Population	126823000		126823000	69752650		69752650
Overweight	9625866		10488262	5384905		4254912
Obese	4578310		4933415	2776155		2371590
Change Overweight			-862396			1129993
Change obese			-355104			404565

Note: N here is unweighted N

Table S7: Estimated impact of introducing warning labels on obesity reduction by wealth quintile assuming 15%, 25% and 35% calorie reduction per day.

	Overall Sample					Sample-Consuming specified food items				
	N	Baseline	15%	25%	35%	N	Baseline	15%	25%	35%
Quintile 1	2,935	0.4	0.4	0.4	0.4	1,072	0.3	0.2	0.2	0.2
Quintile 2	3,143	1.3	1.5	1.5	1.5	1,205	0.9	0.6	0.5	0.5
Quintile 3	3,457	2.5	2.9	2.6	2.5	1,578	1.6	1.2	0.7	0.5
Quintile 4	3,503	5.1	5.6	4.7	4.4	1,902	5.2	4.9	3.4	2.6
Quintile 5	3,406	8.2	8.5	7.3	6.9	1,940	8.7	7.0	4.9	4.1
Total	16,444	3.6	3.9	3.4	3.2	7,697	4.0	3.4	2.3	1.9

Table S8 State-wise consumption of various HFSS food items per week, CNNS 2016-18

	Fried Food (%)	Junk Food (%)	Sweets (%)	Aerated drinks (%)	Any one of the four food items (%)	N
India	37.0	11.3	16.0	11.8	44.7	16444
Andhra Pradesh	31.2	19.5	23.6	38.2	52.6	147
Arunachal Pradesh	15.3	8.3	3.8	3.5	18.6	163
Assam	17.8	16.4	6.7	4.4	23.9	325
Bihar	43.4	23.6	13.1	7.0	49.6	131
Chhattisgarh	24.1	20.3	13.5	24.8	42.7	325
Goa	53.5	34.0	19.0	40.8	64.9	226
Gujarat	23.7	6.8	8.0	6.3	27.1	1015
Haryana	34.4	10.7	9.8	9.4	39.5	3707
Himachal Pradesh	31.1	5.6	9.9	3.7	35.9	1403
Jammu and Kashmir	22.8	23.9	16.8	19.2	41.3	4
Jharkhand	20.2	20.5	15.1	21.5	37.8	9
Karnataka	14.5	19.7	10.1	8.3	27.0	16
Kerala	37.8	28.1	21.8	6.6	52.2	25
Madhya Pradesh	7.3	34.5	9.7	5.2	40.7	12
Maharashtra	27.2	10.5	18.5	8.9	30.0	28
Manipur	17.4	14.1	9.9	10.0	28.7	28
Meghalaya	16.5	4.1	7.5	6.3	21.1	345
Mizoram	31.7	10.6	23.2	10.8	40.6	1024
Nagaland	36.9	11.3	16.2	10.6	42.4	542
NCT of Delhi	55.1	18.8	21.1	6.2	59.5	444
Odisha	34.8	8.9	10.5	2.2	39.4	397
Punjab	47.5	7.8	12.7	2.6	51.2	1502
Rajasthan	43.1	13.5	16.6	23.3	49.1	690
Sikkim	47.6	18.4	22.2	16.1	56.7	1294
Tamil Nadu	32.3	10.2	14.5	18.2	45.7	626
Telangana	49.4	8.9	43.3	20.1	66.5	597
Tripura	55.4	28.7	27.8	33.2	68.3	13
Uttar Pradesh	38.6	9.1	23.8	10.9	50.3	296
Uttarakhand	54.0	12.7	34.8	24.8	69.9	744
West Bengal	31.4	9.7	28.8	31.3	53.2	365

Table S9: Economic cost of chronic conditions related to consumption of HFSS items, assuming different reduction scenarios

	Total cases averted				Economic burden in \$ (overall cost in million)			
	35%	25%	15%	10%	35%	25%	15%	10%
Diabetes	23056	17692	8819	3580	9.6	7.4	3.7	1.5
Asthama	70573	54885	24832	10024	16.1	12.5	5.7	2.3
Any heart disease	5127	3750	2505	1031	15.2	11.1	7.4	3.1
Cancer	7612	5934	2636	1063	30.7	24.0	10.6	4.3
Total	106368	82261	38792	15698	71.7	55.0	27.4	11.1
	YLDs =DW*LE				Productivity benefits= Cases*DW*LE*Income per capita			
	35%	25%	15%	10%	35%	25%	15%	10%
Diabetes	30597	23479	11703	4751	60	46	23	9
Asthama	28670	22297	10088	4072	56	44	20	8
Any heart disease	5693	4164	2782	1145	11	8	5	2
Cancer	10102	7875	3498	1410	20	16	7	3
Total	75062	57815	28071	11378	148	114	55	22

Table S10: List of top Snacks, beverages and confectionaries companies and products in India

Manufacturer/Distributor	Product	Manufacturer/Distributor	Product
Aims Beverages	Sailor	PepsiCo	Mountain Dew
Bisleri	Bisleri Pop	PepsiCo	Nimbooz
Bisleri	Urzza	PepsiCo	Pepsi
Coca-Cola	Coca	PepsiCo	Tropicana
Coca-Cola	Fanta	PepsiCo	7 Up
Coca-Cola	Limca	Pioma	Rasna
Coca-Cola	Maaza	RAJU BEVERAGES PVT. LTD.	Artos
Coca-Cola	Minute Maid	Reliance	Campa Cola
Coca-Cola	Sprite	SG corporates	Bindu Soda
Coca-Cola	Tang	Tata	Tata Gluco+
Coca-Cola	Thums Up	Universal Group	Xtra Power E Drink
Del Monte	Del Monte fruit drinks	Viking beverages	XXX
DS Group	Catch Clear	Xalta	Xalta
DS Group	Catch Jira	Big Mishra Pedha	Sweets and snacks
DS Group	Catch Juice Beverages	Bikanervala	Sweets and snacks
			Biscuits, cookies, cakes, rusks, extruded snacks
DS Group	Catch Shikanji Masala	Bisk Farm	Sweets
DS Group	Catch Spring Cola	Bombay Sweets	Confectionary
DS Group	Catch Spring Lemon	Candico	Sweets and snacks
DS Group	Catch Spring Orange	Chitale Bandhu Mithaiwale	Sweets and snacks
DS Group	Catch Sprint	G Pulla Reddy Sweets	Sweets
Godrej	Jumpin	The Grand Sweets and Snacks	Sweets and snacks
Hajoori and sons	Sosyo	Haldiram's	Sweets and snacks
Hamdard	Rooh Afza	K.C. Das Grandsons	Sweets and snacks
Hector Beverages	Paper Boat	Kwality Wall's	Desserts
Kali Mark	Bovonto	Aavin	Ice-cream
Om Food Products	Fruit Jump	Amul	Ice-cream
Parle Agro	Appy	Arun ice cream	Ice-cream
Parle Agro	Appy Fizz	Creamstone	Ice-cream
Parle Agro	Cafe Cuba	Havmor	Ice-cream
Parle Agro	Frooti	Ideal ice cream	Ice-cream
Parle Agro	Grappo Fizz	Milma	Ice-cream
Parle Agro	LMN	Mother dairy	Ice-cream
Pepsico	Duke's Lemonade	Natural	Ice-cream
Pepsico	Duke's Mangola	Nirula	Ice-cream
Pepsico	Mirinda	Vadilal	Ice-cream

Table S11: WPI inflation rate and label cost in the Australian dollar

Financial Year	Index	WPI inflation	Label cost (AUD)	Label cost (USD)
2014-15	113.9		2390	1530
2015-16	109.7	-3.7	2302	1473
2016-17	111.6	1.7	2342	1499
2017-18	114.9	3.0	2411	1543
2018-19	119.8	4.3	2514	1609
2019-20	121.8	1.7	2556	1636
2020-21	123.4	1.3	2589	1657
2021-22	139.4	13.0	2925	1872
2022-23	152.5	9.4	3200	2048