Supplemental Information

Thinness, overweight, and obesity among 6- to 17-year-old Malaysians: Secular trends and sociodemographic determinants from 2006-2015

Table S1a. Bivariate associations of individual sociodemographic characteristics with the prevalence of thinness in boys in 2015 by age group. Prevalence Ratio (PR) describes the relative change in the prevalence of thinness in each subgroup over the reference group. National Health and Morbidity Survey (NHMS 2015), Malaysia (Table continues to next page).

Sociodemographic characteristic	Preadolescent			Early Adolescent			Mid-Adolescent		
	n	PR (95% CI)[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]
Boys									
Age Group[c]	718	1.36 (1.07, 1.74)		665	0.95 (0.75, 1.20)		697	Ref	
Ethnicity									
Malay	512	Ref	0.165	477	Ref	0.804	474	Ref	0.190
Chinese	87	0.85 (0.51, 1.41)		66	1.12 (0.63, 1.99)		90	0.71 (0.41, 1.21)	
Indian	42	1.41 (0.88, 2.26)		47	1.30 (0.73, 2.33)		61	1.41 (0.88, 2.26)	
Other Bumiputeras[d]	77	0.76 (0.49, 1.17)		75	0.94 (0.50, 1.78)		72	0.87 (0.51, 1.47)	
Residential Area[e]									
Urban	378	Ref	0.357	380	Ref	0.708	404	Ref	0.991
Rural	340	0.87 (0.64, 1.18)		285	1.07 (0.74, 1.54)		293	1.00 (0.72, 1.40)	
Household Size[f]									
Small	63	1.42 (0.92, 2.19)		70	1.76 (1.10, 2.83)		113	0.73 (0.47, 1.13)	
Medium	469	Ref	0.156	424	Ref	0.064	431	Ref	0.325
Large	186	0.92 (0.66, 1.29)		171	1.20 (0.78, 1.85)		153	1.03 (0.68, 1.56)	
Household Income[g]									
Q1 (Lowest Quintile)	108	Ref	0.306	123	Ref	0.920	110	Ref	0.565
Q2	85	0.82 (0.46, 1.43)		126	1.05 (0.58, 1.89)		146	0.71 (0.41, 1.23)	
Q3	97	0.76 (0.45, 1.29)		132	0.85 (0.48, 1.50)		131	1.12 (0.68, 1.83)	
Q4	98	0.65 (0.37, 1.15)		127	0.87 (0.47, 1.61)		152	0.87 (0.54, 1.41)	
Q5 (Highest Quintile)	106	0.55 (0.31, 0.99)		131	0.87 (0.47, 1.62)		130	0.88 (0.51, 1.52)	

All bivariate analyses were age-adjusted

Age-adjusted Log-Poisson regression analysis was performed separately for ethnicity, residential area, household size and household income for their independent association with thinness.

*Outcome Thinness vs. Normal Weight. Thinness was classified according to the IOTF classification[(13)].

Age Groups: Preadolescent 6-9 years old, Early adolescent 10-13 years old and Mid-adolescent 14-17 years old

[a]95% confidence interval for the prevalence ratio (PR).

[b]Significance test for each sociodemographic subgroup, *significance at <5% level, ** significance at <1% level.

[c]Comparing preadolescent and early adolescent to mid-adolescent (p=0.008).

[d]Other Bumiputeras comprised of indigenous individuals living in Peninsular and East Malaysia.

[e]Urban: Areas with population sizes ≥10,000, Rural: Areas with population sizes <10,000.

[f]Household Size was classified based on the number of individuals living in the household into small (maximum three), medium (between four and six) and large (seven or more).

[g]Household Income is the total average earnings of all individuals living in the household per month and was classified into Quintile. Quintile 1 = the lowest income quintile, Quintile 5 = the highest income quintile.

Table S1b. Bivariate associations of individual sociodemographic characteristics with the prevalence of thinness in girls in 2015 by age group. The Prevalence Ratio (PR) describes the relative change in the prevalence of thinness in each subgroup over the reference group. National Health and Morbidity Survey (NHMS 2015), Malaysia (Table continued from previous page).

Sociodemographic characteristic	Preadolescent			Early Adolescent			Mid-Adolescent		
	n	PR (95% CI)[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]
Girls									
Age Group[c]	784	1.50 (1.20, 1.88)		710	1.08 (0.86, 1.37)		744	Ref	
Ethnicity									
Malay	562	Ref	0.027*	498	Ref	0.804	511	Ref	0.631
Chinese	86	0.65 (0.40, 1.05)		83	0.78 (0.46, 1.33)		103	0.97 (0.60, 1.55)	
Indian	40	1.49 (0.99, 2.24)		52	0.83 (0.47, 1.48)		62	1.39 (0.84, 2.31)	
Other Bumiputeras[d]	96	0.81 (0.58, 1.15)		77	0.98 (0.60, 1.60)		68	1.05 (0.64, 1.72)	
Residential Area[e]									
Urban	424	Ref	0.405	408	Ref	0.625	431	Ref	0.912
Rural	360	0.90 (0.70, 1.16)		302	1.09 (0.78, 1.53)		313	1.02 (0.73, 1.42)	
Household Size[f]									
Small	65	1.08 (0.70, 1.65)		77	1.22 (0.75, 1.98)		121	1.16 (0.78, 1.75)	
Medium	526	Ref	0.401	440	Ref	0.682	473	Ref	0.442
Large	193	0.83 (0.61, 1.13)		193	0.99 (0.69, 1.43)		150	0.79 (0.47, 1.34)	
Household Income[g]									
Q1 (Lowest Quintile)	153	Ref	0.372	146	Ref	0.548	148	Ref	0.565
Q2	144	0.98 (0.61, 1.58)		126	1.00 (0.60, 1.68)		154	1.53 (0.90, 2.60)	
Q3	134	1.24 (0.81, 1.89)		150	0.74 (0.46, 1.21)		139	1.25 (0.70, 2.22)	
Q4	140	1.04 (0.68, 1.61)		130	1.08 (0.66, 1.77)		139	1.49 (0.85, 2.60)	
Q5 (Highest Quintile)	180	0.83 (0.54, 1.27)		120	0.77 (0.47, 1.25)		122	1.30 (0.72, 2.38)	

All bivariate analyses were age-adjusted

Age-adjusted Log-Poisson regression analysis was performed separately for ethnicity, residential area, household size and household income for their independent association with thinness.

*Outcome Thinness vs. Normal Weight. Thinness was classified according to the IOTF classification[(13)].

Age Groups: Preadolescent 6-9 years old, Early adolescent 10-13 years old and Mid-adolescent 14-17 years old

[a]95% confidence interval for the prevalence ratio (PR).

[b]Significance test for each sociodemographic subgroup, *significance at <5% level, ** significance at <1% level.

[c]Comparing preadolescent and early adolescent to mid-adolescent ($p<0.001$)

[d]Other Bumiputeras comprised of indigenous individuals living in Peninsular and East Malaysia.

[e]Urban: Areas with population sizes ≥10,000, Rural: Areas with population sizes <10,000.

[f]Household Size was classified based on the number of individuals living in the household into small (maximum three), medium (between four and six) and large (seven or more).

[g]Household Income is the total average earnings of all individuals living in the household per month and was classified into Quintile. Quintile 1 = the lowest income quintile, Quintile 5 = the highest income quintile.

Table S1c. Bivariate associations of individual sociodemographic characteristics with the prevalence of overweight in boys in 2015, by age group. The Prevalence Ratio (PR) describes the relative change in the prevalence of overweight individuals in each subgroup over the reference group. National Health and Morbidity Survey (NHMS 2015), Malaysia (Table continues to next page).

Sociodemographic characteristic	Preadolescent			Early Adolescent			Mid-Adolescent		
	n	PR (95% CI)[a]	*p*-value[b]	n	PR (95% CI)[a]	*p*-value[b]	n	PR (95% CI)[a]	*p*-value[b]
Boys									
Age Group[c]	752	1.16 (0.96, 1.41)		790	1.18 (0.98, 1.43)		743	Ref	
Ethnicity									
Malay	522	Ref	0.118	550	Ref	0.012*	494	Ref	0.885
Chinese	103	1.13 (0.80, 1.60)		101	1.57 (1.17, 2.11)		110	1.13 (0.76, 1.66)	
Indian	44	1.57 (1.08, 2.27)		49	0.95 (0.58, 1.58)		57	0.89 (0.50, 1.60)	
Other Bumiputeras[d]	83	0.98 (0.63, 1.53)		90	0.91 (0.58, 1.43)		82	1.06 (0.65, 1.71)	
Residential Area[e]									
Urban	398	Ref	0.719	457	Ref	0.284	420	Ref	0.336
Rural	354	0.95 (0.71, 1.26)		333	0.87 (0.68, 1.12)		323	1.15 (0.86, 1.53)	
Household Size[f]									
Small	72	1.61 (1.16, 2.23)		90	1.39 (1.02, 1.89)		126	0.86 (0.57, 1.28)	
Medium	499	Ref	0.006*	509	Ref	0.056	460	Ref	0.597
Large	181	0.92 (0.67, 1.26)		191	0.89 (0.64, 1.23)		157	0.86 (0.60, 1.25)	
Household Income[g]									
Q1 (Lowest Quintile)	149	Ref	0.659	137	Ref	0.449	114	Ref	0.664
Q2	125	0.78 (0.47, 1.30)		147	1.14 (0.72, 1.79)		155	1.10 (0.65, 1.87)	
Q3	147	1.09 (0.72, 1.65)		152	0.92 (0.57, 1.43)		134	1.40 (0.82, 2.42)	
Q4	149	1.12 (0.73, 1.71)		146	0.94 (0.59, 1.50)		166	1.36 (0.82, 2.27)	
Q5 (Highest Quintile)	154	1.00 (0.66, 1.53)		181	1.27 (0.81, 1.97)		147	1.30 (0.78, 2.17)	

All bivariate analyses were age-adjusted

Age-adjusted Log-Poisson regression analysis was performed separately for ethnicity, residential area, household size and household income for their independent association with Overweight.

*Outcome: Overweight (including Obesity) vs. Normal Weight. Overweight (including obesity) individuals were classified according to the IOTF classification[(13)].

Age Groups: Preadolescent 6-9 years old, Early adolescent 10-13 years old and Mid-adolescent 14-17 years old.

[a]95% confidence interval for the prevalence ratio (PR).

[b]Significance test for each sociodemographic subgroup, *significance at <5% level, ** significance at <1% level

[c]Comparing preadolescent and early adolescent to mid-adolescent (*p*=0.177).

[d]Other Bumiputeras comprised of indigenous individuals living in Peninsular and East Malaysia.

[e]Urban: Areas with population sizes ≥10,000, Rural: Areas with population sizes <10,000.

[f]Household Size was classified based on the number of individuals living in the household into small (maximum three), medium (between four and six) and large (seven or more).

[g]Household Income is the total average earnings of all individuals living in the household per month and was classified into Quintile. Quintile 1 = the lowest income quintile, Quintile 5 = the highest income quintile.

Table S1d. Bivariate associations of individual sociodemographic characteristics with the prevalence of overweight in girls in 2015, by age group. The Prevalence Ratio (PR) describes the relative change in the prevalence of overweight individuals in each subgroup over the reference group. National Health and Morbidity Survey (NHMS 2015), Malaysia (Table continued from previous page).

Sociodemographic characteristic	Preadolescent			Early Adolescent			Mid-Adolescent		
	n	PR (95% CI[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]	n	PR (95% CI)[a]	p-value[b]
Girls									
Age Group[c]	735	0.97 (0.81, 1.17)		826	1.16 (0.97, 1.39)		825	Ref	
Ethnicity									
Malay	521	Ref	0.193	597	Ref	0.263	578	Ref	0.237
Chinese	84	0.79 (0.50, 1.26)		91	0.71 (0.48, 1.06)		112	0.86 (0.59, 1.26)	
Indian	41	1.57 (0.94, 2.62)		56	0.86 (0.54, 1.36)		60	0.54 (0.29, 1.03)	
Other Bumiputeras[d]	89	0.87 (0.56, 1.33)		82	0.78 (0.51, 1.20)		75	1.04 (0.71, 1.54)	
Residential Area[e]									
Urban	400	Ref	0.061	462	Ref	0.478	473	Ref	0.527
Rural	335	0.75 (0.56, 1.01)		364	1.09 (0.86, 1.37)		352	1.09 (0.83, 1.43)	
Household Size[f]									
Small	64	1.16 (0.75, 1.80)		102	1.20 (0.89, 1.62)		129	0.97 (0.67, 1.40)	
Medium	501	Ref	0.738	523	Ref	0.020*	527	Ref	0.375
Large	170	0.94 (0.64, 1.38)		201	0.70 (0.50, 0.98)		169	0.78 (0.56, 1.10)	
Household Income[g]									
Q1 (Lowest Quintile)	136	Ref	0.205	166	Ref	0.376	161	Ref	0.548
Q2	149	1.59 (0.98, 2.60)		149	0.79 (0.54, 1.15)		175	1.24 (0.80, 1.92)	
Q3	104	0.95 (0.55, 1.65)		169	0.75 (0.52, 1.07)		151	1.00 (0.63, 1.57)	
Q4	133	1.30 (0.78, 2.16)		156	1.00 (0.70, 1.44)		160	1.32 (0.85, 2.04)	
Q5 (Highest Quintile)	185	1.15 (0.71, 1.86)		150	0.96 (0.68, 1.35)		136	1.07 (0.67, 1.73)	

All bivariate analyses were age-adjusted.

Age-adjusted Log-Poisson regression analysis was performed separately for ethnicity, residential area, household size and household income for their independent association with Overweight.

*Outcome: Overweight (including Obesity) vs. Normal Weight. Overweight (including obesity) individuals were classified according to the IOTF classification[13].

Age Groups: Preadolescent 6-9 years old, Early adolescent 10-13 years old and Mid-adolescent 14-17 years old

[a]95% confidence interval for the prevalence ratio (PR).

[b]Significance test for each sociodemographic subgroup, *significance at <5% level, ** significance at <1% level

[c]Comparing preadolescent and early adolescent to mid-adolescent (p=0.138)

[d]Other Bumiputeras comprised of indigenous individuals living in Peninsular and East Malaysia.

[e]Urban: Areas with population sizes ≥10,000, Rural: Areas with population sizes <10,000.

[f]Household Size was classified based on the number of individuals living in the household into small (maximum three), medium (between four and six) and large (seven or more).

[g]Household Income is the total average earnings of all individuals living in the household per month and was classified into Quintile. Quintile 1 = the lowest income quintile, Quintile 5 = the highest income quintile.