

Daily snacking frequency is associated with age, working pattern and dietary nutritional profile of professional workers aged between 30 and 65 years old

Y. Jin¹ and T. Birchall¹

¹School of Health Sciences, Liverpool Hope University, Liverpool. L16 9JD.

There is an emerging body of studies showing the association of snacking behaviour with weight status or nutritional status in general populations^(1,2). However, there is a lacking of evidence examining the link of snacking frequency with nutritional status in urban-living professional workers. This study investigated the association of daily snacking frequency with nutritional status amongst professional workers residing in the North West of England.

35 professional workers (M 13, F 22) aged 30–65 years old were recruited via random selection from Liverpool and its surrounding areas. Laboratory and anthropometric measures of CVD risk were assessed including blood pressure, measures of central obesity and biomarkers of fasting capillary blood glucose and lipid profile. Dietary intake profiles including total energy, nutrients and snacking behaviours were recorded using a validated 3-day diet diary and analysed using a dietary assessment software Microdiet. Information on working hours per week was collected using a sociodemographic questionnaire. Variation in nutritional status amongst all snacking-frequency groups was assessed by Univariate analysis with Bonferroni *post hoc* test using SPSS (v 22). The statistical significance was set at 0.05.

The snack items consumed comprised hot and cold beverages, wine and beer, savoury snacks, fruit and vegetables, toast, sandwich, crumpet, humus, bread sticks, cereals, cereal bars, dairy foods, sweets, confectioneries, ice cream, nuts, raisins, fruit jelly, yogurt. Significant variations existed in age, working hours/week and dietary nutritional profiles across all snack-frequency groups. Only statistically significant data are presented in the Table below.

Parameters	Snacking Frequency/day*							
	Once		Twice		Three times		Four times	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total Energy intake (Kcal/day)	1575.56 ^a	114.04	1955.07 ^{ab}	557.82	2131.47 ^{ab}	506.81	2413.92 ^b	802.88
Dietary total sugar intake (g/day)	54.97 ^a	15.97	80.29 ^{ab}	31.08	103.58 ^b	42.39	108.83 ^b	44.84
Dietary protein intake (g/day)	56.23 ^a	1.48	72.88 ^{ab}	1.33	72.51 ^{ab}	1.32	104.71 ^b	1.82
Dietary total cholesterol (g/day)	95.02 ^a	3.29	153.39 ^{ab}	1.83	172.07 ^{ab}	2.07	312.10 ^b	1.60
Dietary Retinol Equivalent (µg/day)	661.07 ^{ab}	251.71	553.37 ^a	337.31	840.48 ^b	399.98	26.97 ^b	299.90
Dietary Total carotene (µg/day)	2238.72 ^b	2.19	1288.25 ^{ab}	2.59	2691.53 ^b	2.51	436.52 ^a	4.68
Dietary Vitamin B ₂ (µg/day)	1.66 ^{ab}	0.84	1.16 ^a	0.53	1.31 ^{ab}	0.62	1.92 ^b	0.55
Dietary Vitamin B ₅ (µg/day)	4.66 ^{ab}	2.57	3.35 ^a	1.58	4.40 ^{ab}	1.36	6.18 ^b	1.63
Age (years)	39.33 ^{ab}	11.85	48.33 ^b	10.24	44.77 ^{ab}	9.93	36.50 ^a	5.69
Working hours/week	49.67 ^c	8.39	35.57 ^{bc}	11.06	23.81 ^a	13.99	28.06 ^{ab}	6.62

* Individual mean was calculated based on the 3-day dietary record with all resulted values being classified into four levels. Different uppercase superscript indicate statistically significant differences amongst snacking-frequency groups.

In conclusion, total energy and certain macronutrient intakes followed an increasing trend with the increased snacking frequencies. Snacking of four times a day resulted in significantly higher intakes of vitamin B₂ and B₅ compared to the snacking of twice a day group but stayed the lowest in the total carotene intake. Snacking of the highest frequency was observed in the youngest age group who worked for almost the shortest working time per week amongst all.

1. Murakami K and Livingstone MB (2016) *Br J Nutr* March 22, 1–11.
2. Park E, Edirisinghe I, Inui T *et al. Physio Behav* 159, 64–71.