Supplementary Materials

Association between the frequency of combined staple, main, and side dishes and nutritional adequacy among young Japanese women: A cross-sectional study

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Supplementary Table 1. Prevalence of not meeting dietary goals or estimated average requirement of the Japanese Dietary Reference Intakes for Japanese 2025 among participants categorised into three groups based on frequency of staple food, main dish, and side dish meals consumption[†‡]

	Reference value	Prevalence of inadequacy (%)				*p* for trend
		Total (n=329)	0–1 day/week (n=93)	2–4 days/week (n=141)	5–7 days/week (n=95)	
Nutrients for DG						
Total fat (% energy)	20–30	45.0	51.6	41.8	43.2	0.247
Saturated fat (% energy)	≤7	62.6	67.7	58.9	63.2	0.522
Total Protein (% energy)	13-20	32.8	41.9	34.8	21.1	0.002*
Carbohydrate (% energy)	50-65	36.5	40.9	34.8	34.7	0.385
Total dietary fibre (g)	≥18	97.9	100.0	99.3	93.7	0.003*
Sodium (salt-equivalent) (g)	<7	69.9	53.8	72.3	82.1	<0.001*
Potassium (mg)	≥2600	89.7	94.6	95.0	76.8	<0.001*
Nutrients for EAR						
Total protein (g)	≥40	31.0	46.2	29.1	19.0	<0.001*
Vitamin A (μg RAE)	≥450	66.3	74.2	71.6	50.5	<0.001*
Vitamin B-1 (mg)	≥0.6	62.3	76.3	68.1	40.0	<0.001*
Vitamin B-2 (mg)	≥1	64.7	72.0	70.2	49.5	0.001*
Niacin (mg, NE)	≥9	6.1	14.0	4.3	1.1	<0.001*
Vitamin B-6 (mg)	≥1	69.0	83.9	73.8	47.4	<0.001*
Folate (μg)	≥200	49.9	64.5	53.9	29.5	<0.001*
Vitamin C (mg)	≥80	63.5	77.4	69.5	41.1	<0.001*
Calcium (mg)	≥550	87.5	93.6	90.8	76.8	<0.001*
Magnesium (mg)	≥230	84.8	91.4	89.4	71.6	<0.001*
Iron (mg)	≥9.3	93.9	98.9	95.7	86.3	<0.001*
Zinc (mg)	≥6	52.0	68.8	52.5	34.7	<0.001*
Copper (mg)	≥0.6	21.6	38.7	17.7	10.5	<0.001*

DG, dietary goals; EAR, estimated average requirement.
Values are presented as OR (95%CI)
[†]Nutrient intakes shown in this table were not adjusted for energy intake using the Estimated Energy Requirement (EER).
[‡]*p*-values for linear trends across tertiles (assigned ordinal numbers 0–2) of staple, main, and side dish meal are based on the Cochran–Armitage trend test of the trend for categorical variables
*$p<0.05$

Supplementary Table 2. Adjusted odds ratio of not meeting dietary goals or estimated average requirement of the Japanese Dietary Reference Intakes for Japanese 2025 among participants categorised into three groups based on frequency of staple food, main dish, and side dish meals consumption[†‡]

	0–1 day/week (n=93)	2–4 days/week (n=141)	5–7 days/week (n=95)	*p* for trend[§]
Nutrients with DG				
Total fat	1.00 (reference)	0.64 (0.37, 1.11)	0.69 (0.37, 1.27)	0.237
Saturated fat	1.00 (reference)	0.54 (0.30, 0.98)	0.61 (0.31, 1.18)	0.148
Total protein	1.00 (reference)	0.83 (0.46, 1.48)	0.38 (0.19, 0.76)	0.008*
Carbohydrate	1.00 (reference)	0.87 (0.49, 1.56)	0.80 (0.41, 1.54)	0.499
Total dietary fibre	NA	NA	NA	NA
Sodium (salt-equivalent)	1.00 (reference)	1.49 (0.70, 3.18)	1.80 (0.73, 4.42)	0184
Potassium	1.00 (reference)	3.15 (0.71, 13.91)	0.41 (0.12, 1.39)	0.014*
Nutrients with EAR				
Total protein	1.00 (reference)	0.92 (0.38, 2.23)	0.60 (0.21, 1.73)	0.362
Vitamin A	1.00 (reference)	1.68 (0.84, 3.35)	0.73 (0.36, 1.50)	0.290
Vitamin B-1	1.00 (reference)	1.18 (0.52, 2.70)	0.27 (0.11, 0.670	0.003*
Vitamin B-2	1.00 (reference)	1.78 (0.86, 3.67)	0.75 (0.35, 1.61)	0.354
Niacin	1.00 (reference)	0.46 (0.14, 1.54)	0.21 (0.02, 1.94)	0.087
Vitamin B-6	1.00 (reference)	0.85 (0.35, 2.06)	0.23 (0.09, 0.58)	<0.001*
Folate	1.00 (reference)	1.05 (0.53, 2.07)	0.38 (0.18, 0.82)	0.013*
Vitamin C	1.00 (reference)	1.07 (0.53, 2.18)	0.28 (0.13, 0.60)	<0.001*
Calcium	1.00 (reference)	1.59 (0.47, 5.35)	0.58 (0.19, 1.81)	0.133
Magnesium	1.00 (reference)	1.78 (0.55, 5.81)	0.46 (0.16, 1.37)	0.041*
Iron	1.00 (reference)	0.43 (0.03, 5.84)	0.11 (0.01, 1.34)	0.020*
Zinc	1.00 (reference)	0.75 (0.29, 1.97)	0.28 (0.09, 0.86)	0.025*
Copper	1.00 (reference)	0.61 (0.22, 1.69)	0.40 (0.12, 1.41)	NA[¶]

OR, odds ratio; CI, Confidence Interval; DG, dietary goal; EAR, estimated average requirement; SMS, staple food, main dish, and side dish; BMI, body mass index

Values are presented as OR (95%CI)

[†]Multivariable adjusted ORs of nutrient intake inadequacy between the groups stratified by SMS meal frequency are calculated by adjusting for age (years, continuous), BMI (<18.5, 18.5–24.9, ≥25.0 kg/m²), living alone (yes or no), physical activity (low, moderate, high), current smoking status (yes or no), current alcohol consumption status (≥1 cup/week, <1 cup/week), energy intake (kcal, continuous), and supplement use (yes or no). Total dietary fibre (EAR) is excluded from logistic regression analyses owing to their extremely low prevalence of inadequacy.

[‡]Nutrient intakes were adjusted for energy intake using the Estimated Energy Requirement (EER) based on physical activity level

*p<0.05

Supplementary Table 3. Number of nutrients not meeting tentative dietary goals (n=7) of the Japanese Dietary Reference Intakes and estimated average requirements (n=13) status among participants stratified by frequency of staple food, main dish, and side dish meals consumption[†‡]

	Total (n=329)	0–1 day/week (n=93)	2–4 days/week (n=141)	5–7 days/week (n=95)	*p* for trend
Not meeting DG	4.3 (1.3)	4.5 (1.3)	4.4 (1.2)	4.2 (1.4)	0.06
Not meeting EAR	7.5 (3.9)	9.0 (3.6)	7.9 (3.5)	5.6 (4.0)	<0.001*

DG, dietary goals; EAR, estimated average requirement; SD, standard deviation

Values are presented as Mean (SD)

[†]Nutrient intakes shown in this table were not adjusted for energy intake using the Estimated Energy Requirement (EER)

[‡]Multiple linear regression analyses were conducted to assess trends in the number of nutrients not meeting the DG or EAR across SMS meal frequency categories, with adjustments for age (years, continuous), body mass index (<18.5, 18.5–24.9, ≥25.0 kg/m²), living alone (yes or no), physical activity (low, moderate, high), current smoking status (yes or no), current alcohol consumption status (≥1 cup/week, <1 cup/week), energy intake (kcal, continuous), and supplement use (yes or no)

*p <0.05