

## NUTRITION IN SHIFT WORKERS USING ROTATING SHIFTS

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Shiftwork alters many aspects of the daily routine, including the dietary pattern of the individual. In this study, we investigated the effect of short rotation shift work on nutrient intake, since previous studies showed that such a shift system alters the pattern of food use according to the shift worked (Fisher et al. 1983).

Weighed food records were collected for two days of each shift and for two non-working days using portable electronic scales with an automatic tare facility (Digita 8000, Soehnle-Wagen GmbH and Co.). The food records were analysed using the SODA 1 program (Computer Models Perth WA) based on the Metric Tables of Composition of Australian Foods (Thomas and Corden 1977). Statistical analysis involved one way analysis of variance. Fifteen industry workers aged 26-45 years were studied on each of the day, night and afternoon shifts and on days off. The mean and SEM of the daily intakes of energy and macronutrients as well as the percentage contribution of macronutrients to energy intake according to shift are shown below (Table 1).

	Shift			Day Off
	Day	Night	Afternoon	
Energy (MJ)	13.7 ± 0.5	12.5 ± 0.6	11.6 ± 0.6*	12.3 ± 0.7
Protein (g)	112 ± 5.6	109 ± 5.1	95 ± 4.2	101 ± 6.9
Fat (g)	140 ± 7.7	137 ± 7.6	126 ± 7.8	131 ± 8.0
Carbohydrate (g)	357 ± 17.0	320 ± 23.7	322 ± 15.8	304 ± 18.7
Percent Energy				
Protein	14.3 ± 0.5	15.2 ± 0.6	13.8 ± 0.5	14.5 ± 0.6
Fat	40.2 ± 1.5	42.0 ± 1.4	39.9 ± 1.0	42.4 ± 1.0
Carbohydrate	45.6 ± 1.5	42.8 ± 1.7	46.3 ± 1.1	43.0 ± 1.2

\* significantly different ( $p < 0.05$ ) from day shift.

Vitamin and mineral intake was unaffected by shift rotation and average intakes were well above recommended allowances for all vitamins and minerals analysed. The mean and SEM of alcohol consumption according to shift is shown below (Table 2).

	Intake all days	Energy intake	Intake per drinking day	No. of drinking days	Energy intake
	(g)	(%)	(g)		(%)
Day	22.8 ± 5.1	5	48.8 ± 7.5	14	10
Night	9.1 ± 3.2*	2	30.2 ± 6.5	9	7
Afternoon	2.1 ± 1.2*	2	20.7 ± 5.8	3	5
Day Off	22.1 ± 5.7	5	55.3 ± 7.2	12	13

\* significantly different ( $p < 0.05$ ) from day shift and day off.

The findings of this study indicate that, in the group of shift workers studied, the changes in the pattern of food use previously reported with shift rotation had a significant effect on alcohol and energy intake but not on other nutrients in the diet.

FISHER, M., RUTISHAUSER, I.H.E. and READ, R.S.D. (1983). Proc. Nutr. Soc. Aust. 8 : 161.

THOMAS, S. and CORDEN, M. (1977) 'Metric Tables of Composition of Australian Food' (Australian Government Publishing Service : Canberra).

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