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Energy and macronutrient intake of care assistants and nurses working alternating shift patterns in comparison to day workers

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Previous studies have demonstrated that shift workers often consume unhealthy snacks and convenient fast foods. For example, an increase in overall consumption of energy and macronutrients in shift worker nurses were previously reported [1]; however, this has not been confirmed in other studies [2,3]; overall presenting a gap in knowledge on dietary intake of health care professionals who are working alternating shift patterns. The aim of this study was to investigate the energy and macronutrient intake of care assistants and nurses working alternating shift patterns in comparison to regular day time workers.

Following ethical approval, 80 healthy female care assistants and nurses (including 40 alternating shift workers and 40 day workers) were recruited using convenient sampling. These participants were recruited from NHS trusts in Merseyside and West Midlands with assistance of two health care professionals who acted as gatekeepers. Dietary data were collected using a validated 24 hour dietary recall and analysed using dietary analysis software programme; Microdiet (version two; Downlee Systems Ltd, UK). Normal distribution was investigated using the Shapiro-Wilk test of normality and because the main variables were not normally distributed ($P < 0{\cdot}05$), shift pattern variation in energy and macronutrient intake was compared using the nonparametric Mann-Whitney U Test.

The median energy, carbohydrate, sugar, fat, saturated fat and protein intake of shift workers were significantly higher than day workers (Table 1). Although there was no significant correlation between energy intake and weight of either shift or day workers; to eliminate the potential impact of body size; variables were redefined per kg body weight (BW). When expressed per kg BW; the median carbohydrate and fat intake of shift workers were still significantly higher than day worker counterparts (Carbohydrate: 4·5 g/kg BW vs. 4·1 g/kg BW; $p < 0{\cdot}05$ and Fat: 1·3 g/kg BW vs. 1·1 g/kg BW; $p < 0{\cdot}01$).

Table 1. The detail of energy & macronutrient intake of shift and day worker health care professionals;

	Shift Workers ($N = 40$)			Day Workers ($N = 40$)		
		Quartiles			Quartiles	
Energy and Macronutrients	Median	P25	P75	Median	P25	P75
Energy intake (kJ)	10624·6**	9872·3	11813·9	9812·9	8714·7	10353·8
Carbohydrate (g)	323·0**	279·2	368·2	268·9	236·1	305·9
Sugar (g)	128·6*	115·3	167·0	118·1	103·1	147·5
Fat (g)	97·9***	77·7	111·6	76·8	64·8	86·9
Saturated (g)	31·7*	22·4	42·7	24·8	19·6	52·8
Protein (g)	76·8*	64·7	93·2	65·3	52·8	84·9

*=$p < 0{\cdot}05$, **$P < 0{\cdot}01$, ***$P < 0{\cdot}001$

Disruption of circadian rhythms allied with shift work may have adverse effects on energy and macronutrient intake of alternating shift working health care professionals in comparison to day workers, resultant of poor dietary choices. Health care professionals working in alternating shift patters may benefit from reducing their sugar, fat, saturated fat and energy intake.

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