

**Relationships between patterns of food intake and a tendency to being overweight among shift workers.** A Pradignac, M Velten, JL Schlienger, B Canguilhem (*Groupe d'étude sur la nutrition, médecine interne, CHU de Haute-pierre, 67098 Strasbourg cedex, France*)

Shift work frequently exposes employees to becoming overweight because of an increase in the amount of nocturnal eating, a reduction in the number of meals or an increased caloric intake during days off. The goal of this study was to analyse the relationships between work schedule, rhythm of food intake and corpulence.

After pairing them for age, work rank, marital status, and length of service, we selected 123 workers of the National Railway Company and divided them into four groups according to their work schedule: daytime work (DT;  $n = 36$ ), shift work 3 \* 8 ( $n = 29$ ) or 2 \* 8 ( $n = 30$ ) and work with a varying schedule (VS;  $n = 28$ ). Body mass index (BMI) was calculated for each subject. Rhythm of food intake was assessed by a qualitative questionnaire that assessed food intake at seven possible times of the day (breakfast, morning, lunch, afternoon, dinner, evening, night) during work days and days off. For each period, the answer was "yes" if the workers ate something or "no" if they did not. Food intake of the shift workers (3 \* 8 and 2 \* 8) differed from that of the two other work groups: dinner was frequently replaced by an afternoon snack during the afternoon shift; breakfast and lunch were often suppressed during the night shift whereas a night snack was eaten. BMI was greater in shift workers (27.1 and 27.0 vs 25.6 and 25.5 kg/m<sup>2</sup>;  $P < 0.05$ ). A logistic backward regression was performed to clarify the relationships between BMI and work eating habits where the independent variables included daily food intake, age, number of meals and snacks, work group and work schedule. A positive relationship

was noted between BMI and the reduction of the number of meals (OR = 5.72;  $P = 0.001$ ). This relationship was independent of work group, work schedule, age and number of snacks.

In conclusion, shift work seemed to impair food intake and affect body weight more than another work schedule (DT or VS). The increase in weight could result from a diminution of the number of meals whereas the number of snacks did not seem to be significant.

**Influence of shift work, BMI, smoking and dietary intake on triglyceride-rich lipoparticles.** M Romon<sup>1</sup>, MC Nuttens<sup>1</sup>, C Fievet<sup>2</sup>, JM Bard<sup>2</sup>, P Frimat<sup>3</sup>, JC Fruchart<sup>2</sup> (<sup>1</sup> CHRU-Lille; <sup>2</sup> Serlia, Institut Pasteur de Lille; <sup>3</sup> Cereste, Lille, France)

Studies on the protein moiety of lipoparticles have underlined the protein heterogeneity of lipoprotein density classes. To improve the structure-function definition, it has been suggested that lipoproteins be classified according to their apoprotein content. According to this classification, triglyceride-rich lipoparticles consist mainly of two types of apoprotein B containing lipoparticles: LpB:CIII and LpE:B. We have previously shown [Romon et al (1992) *Am J Med* 93, 259-262] that shift work was associated with higher triglyceride (TG) levels. The aim of this study was to investigate the effects of shift work and environmental factors on TG-rich lipoproteins. This study was conducted among 136 male workers divided into two groups: 68 shift workers (aged 21.1–42.7 years) and 68 day workers (aged 22.2–42.6 years), matched for occupational physical demand, educational level and age. Data collection consisted of a questionnaire about smoking and leisure time physical activity, standardized weight and height measurements and an assessment of dietary intake by a 3-day record. Fasting blood samples