METABOLIC RESPONSES ON THE EARLY SHIFT

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Shiftwork has been associated with a higher propensity for the development of metabolic disorders and obesity. The aim of the study was to investigate concentrations of glucose, cortisol, and insulin among fixed night workers (n = 9), fixed early morning workers (n = 6), and day workers (n = 7). Food intake was recorded for 7 days using a diary. Blood samples were collected every 4 h over the course of 24 h, yielding six samples. Total carbohydrate intake was lowest (p < .0005), whereas fat (p = .03) and protein (p < .0005) were highest on the early morning shifts. Early morning workers also had overall elevated cortisol levels relative to the other two groups. Cortisol levels appeared to be more influenced by time since waking prior to the shift than by time-of-day. Cortisol was highest for the early morning group than the day group 12 h after waking, and both the early morning and night groups had higher levels than the day group 16 h after waking (p < .05 in all cases). In contrast, the homeostasis model assessment of insulin resistance (HOMA-IR) appeared to be more influenced by time-of-day than by time since waking prior to the shift. The early morning group had higher levels of HOMA-IR at 08:00 h than the other groups (p < .05). In conclusion, the early morning group had the highest overall concentrations of cortisol and tended to have higher levels of HOMA-IR, indicating that more attention should be given to these workers. Moreover, all three groups showed pronounced cortisol levels on awakening, suggesting that they may have adjusted to their awakening time.

Keywords Cortisol; Food intake; Glucose metabolism; HOMA-IR; Insulin resistance; Shiftwork

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