



The association between shift duty and abnormal eating behavior among nurses working in a major hospital: A cross-sectional study[☆]

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ABSTRACT

Background: Shift work induces stress, disturbs family life and interrupts regular meal schedules. Few studies have addressed the association between shift duties and abnormal eating behavior among hospital nurses.

Objectives and design: We tested the hypothesis that shift duties were independent predictors of abnormal eating. Self-administered surveys consisting of socio-demographic data, working pattern, Perceived Organizational Support (POS) questionnaire and the patterns of eating style identified by the Dutch Eating Behavior Questionnaires (DEBQ) were used.

Settings: One major acute hospital in one Territory of Hong Kong.

Participants: All 662 nurses who worked on a full-time basis in this hospital were invited to join the study and among them, 378 completed surveys were collected with a response rate of 57.1%. The average age was 37.2 years, and 91.5% were female. 67.3 were registered nurses, 17.9% enrolled nurses; and 14.5% were ranked nursing officers or above. 39.1% worked in acute settings (medical wards, intensive care units and emergency departments), and 62.1% of respondents had at least 11 years of clinical experience and 76.2% of respondents had shift duties with 81.9% having at least four shift duties per month. Only 66.7% of respondents had normal body mass index (BMI 18.5–22.9 kg/m²). **Methods:** Three binary logistic regression analyses were conducted with abnormal emotional, external and restraint DEBQ as outcome variables, respectively. We controlled for age, gender, marital status, work setting (acute vs. non-acute), years of clinical experience, the frequency of shift duties, body mass index, perception of body weight changes in the past 6 months, self-perception of recent overeating and POS.

Results: The proportions of participants having abnormal emotional, external and restraint DEBQ scores were 66.4%, 61.4% and 64.0%, respectively. From multiple regression analysis, nurses having 4 or more shift duties per month were more likely to present with abnormal emotional (adjusted odds ratio aOR 2.91, 95% C.I. 1.57–5.42, $p = 0.001$) and restraint (aOR 3.35, 95% C.I. 1.76–6.38, $p < 0.001$) DEBS scores.

Conclusions: Shift duties were positively associated with abnormal eating behavior among nurses working in hospitals. More health promotional initiatives should be targeted towards hospital nurses whose duties require frequent night shifts to enhance healthy eating.

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What is already known about the topic?

- Recent studies showed that sweet junk foods were regarded by nurses as easier options at night.
- Shift work duties among hospital nurses could interrupt regular meal schedules
- The relationship between shift duties and abnormal eating behavior remained unclear.

What this paper adds

- Among 378 nurses working in an acute major hospital, 66.4%, 61.4% and 64.0% presented with abnormal emotional, external and restraint Dutch Eating Behavior Questionnaire scores, respectively.
- Nurses with self-perception of overeating were positively associated with all dimensions of abnormal eating behavior
- Nurses having at least 4 shift duties per month were 2.91 times and 3.35 times more likely to present with abnormal emotional and restraint eating behavior, respectively.

1. Introduction

Internationally around 20% of employees in developed nations work in rotating shifts or carry out overnight duties (Harrington, 2001; Paoli & Merllie, 2001). Previous studies have identified many adverse health problems associated with long-term participation of shift work schedules (Atkinson et al., 2008). These included higher risk of anxiety (Ardekani et al., 2008), depression, insomnia (Ursin et al., 2009), chronic fatigue as well as different cardiovascular and gastrointestinal disorders (Waterhouse et al., 1992; Çelik et al., 2008). In particular, shift work of hospital nurses induces stress (Callaghan et al., 2000), disturbs family life (Gates, 2001) and interrupts regular meal schedules (Persson and Martensson, 2006; Lancaster et al., 2001; Geliebter et al., 2000).

More recent studies have reported that shift work increased job strain and the risk of metabolic syndrome (Esquirol et al., 2009; De Bacquer et al., 2009). Night shift working could have significant effects on the sleeping patterns in the long run, leading to higher cardiac sympathetic regulation (Chung et al., 2009). Among hospital nurses, shift work was recognized as an occupational stressor (Golubic et al., 2009).

A literature review on eating habit of nurses in Hong Kong (Callaghan et al., 1997) showed that only 52% of nurses reported their behaviors of avoiding foods that contain fat, while as low as 56% admitted that they would avoid foods that have high cholesterol content. Only 57% reported eating breakfast on a daily basis, which showed that healthy eating behaviors may not be a predominant pattern presented in the nursing profession. It has been found in other settings that the total energy intake of shift workers were less than that of day workers, and it is probable that the difference could be attributed to lower meal frequency and poorer quality of meals during night shifts (Sudo and Ohtsuka, 2001). Fisher et al. (1986) reported a significant effect of working arrangements on

meal times. In addition, Persson and Martensson (2006) reviewed that sweet and junk foods were generally regarded by nurses as easier options during night duties when compared with other healthier alternatives. Hope et al. (1998) found that nurses eat more in order to cope with stress. It has been reported that elevation of serum cholesterol and low density lipoprotein cholesterol were more common among shift workers (Ghiasvand et al., 2006). Meal frequency could be reduced and the prevalence of high-energy snacking might be increased during the shift duties (De Assis et al., 2003; Lennernas et al., 1995). More recent study also showed that the prevalence of peptic ulcers could be 8 times more common among shift workers when compared with day workers (Costa, 2003). All these findings implied that healthy eating habits among nurses can often be influenced by multiple work-related factors, and the exposure to nutritional risks is increased.

However, few studies have explored the relationship between shift duties among hospital nurses and their eating behavior. This study aimed to evaluate the factors associated with abnormal eating among nurses working in acute hospitals. We tested the hypothesis that night shift work was positively associated with abnormal eating behavior.

2. Methods

2.1. Setting and participant recruitment

The Hospital Authority (HA) of Hong Kong provides free or low-cost medical services to the whole population. One of its districts, namely the Kowloon West region, has 3 major hospitals serving a population of more than 0.62 million under the jurisdiction of HA (Hospital Authority, annual plan 2000/2001). We conducted a cross-sectional survey and invited all working nurses in one major, acute hospital randomly selected in this district during the period January 2009 to February, 2009 to participate in our study. This consisted of 662 nurses after excluding those on maternity leave, sick leave and vacation leave within the study period; community nurses who were not working within the hospital compound; and nursing students who were on clinical practicum from other academic institutions. Assume the proportion of abnormal eating was 60% among nurses on shift duties, and we expected a desired 95% confidence interval of 5%, the required sample size was 369 (Dimension Research Incorporation, 2005). We determined to send the surveys to all nurses in this hospital to achieve adequate number of participants.

Postal surveys were sent to all Departments and wards and all eligible nursing staff was invited to fill in these self-administered questionnaires. Completed surveys were then returned to the researchers via self-stamped envelopes. Questionnaires were sent followed by two reminders for the non-respondents. All participants were ensured of anonymity, confidentiality and reporting of findings as aggregate data only. This study was approved by the Survey and Behavioral Research Ethics Committee, Faculty of Medicine, Chinese University of Hong Kong.

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