

UNIVERSITI TEKNOLOGI MARA

**THE ASSOCIATION BETWEEN
CHRONONUTRITION BEHAVIOR
AND CHRONOTYPES AMONG
HEALTHCARE SHIFT WORKER**

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ABSTRACT

Background: Shift work in healthcare settings disrupts circadian rhythms and sleep patterns, impacting the health and well-being of workers. Chrononutrition, focusing on the alignment of nutrition with circadian rhythms, offers potential benefits for improving outcomes in this population. **Objective:** The aim of this study is to: 1) determine the chrononutrition behavior among healthcare shift workers, 2) identify the chronotypes among healthcare shift workers and 3) investigate the association between chrononutrition behavior and chronotypes among healthcare shift workers. **Methods:** This cross-sectional study was conducted among healthcare shift workers in three different hospitals in Selangor, Malaysia. Data were collected using self-administered questionnaires that assess chrononutrition behavior (CPQ) and chronotypes (MCTQ and MEQ). Descriptive statistics and Chi-square test analysis were used to analyze the data. **Results:** The study found a predominant late chronotype among participants (87.7% late, 10.0% early, and 2.2% intermediate chronotypes). Participants exhibited good eating windows (72.0%) and night eating (78.8%) behaviors, with fair evening latency (62.9%) and evening eating (64.6%) habits. However, breakfast skipping (40.5%) was prevalent. Lunch was identified as the largest meal (72.7%). Notably, no significant association was found between chrononutrition behavior and chronotypes. **Conclusion:** Understanding and addressing the association between chrononutrition behavior and chronotypes among healthcare shift workers holds promise for targeted interventions, potentially improving overall well-being, health outcomes, and job satisfaction in this crucial workforce.

Keywords: Shift work, chrononutrition behavior, chronotypes, healthcare shift workers

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Chapter 1: INTRODUCTION

1.1 Research Background

Based on The International Labour Office (International Labour Organization, 1990a) defines working in shifts as “a method of organization of working time in which workers succeed one another at the workplace so that the establishment can operate longer than the hours of work of individual workers.” In addition to these definitions, the word "shiftwork" has been extensively used in the scientific literature to refer to any schedule of daily working hours that differs from the usual daytime hours (7/8 am – 5/6 pm). The length of the job period, semicontinuous or continuous rota systems, the presence and frequency of work during the "nighttime," the number and variety of shifts, the start and end times for every shift, the rotational direction of the shift, the speed of rotation between shifts, consistency or inconsistency, and the total duration of the whole shift rotation (Costa et al., 2020b).

The phrase chrononutrition behavior refers to the behavioral patterns that are most likely to influence a person's chrononutrition profile. These patterns include nighttime eating, time-restricted feeding, breakfast eating, the timing of the largest meal, evening eating, and the time between eating and sleep time (Veronda et al., 2019). The chrononutrition behavior of an individual may influence their adiposity, which may be associated with physiological responses to sleep patterns and abnormalities in feeding with circadian rhythms (Pot et al., 2016).

Chronotype was initially proposed in 1974, and it refers to "an organism's temporal organization" (Fischer & Hilditch, 2022). In other words, a chronotype is referring to a person's biological clock-driven preference for morning or evening activity. Sleep schedule is regulated via the circadian and homeostatic systems, as well as social and occupational constraints on when sleep can occur. As a result, instead of a "pure" circadian output, a chronotype is determined by sleep-wake behavior which reflects circadian rhythms. Individual chronotypes differ by age and gender. Both men