

SLEEP AND WAKEFULNESS PATTERNS OF NURSES ENGAGED IN ROTATIONAL SHIFT WORK

Pages with reference to book, From 245 To 246

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ABSTRACT

Shift work can be attributed to some of social and health problems in working community. In this study an attempt was made to study the sleep and wakefulness patterns in nurses engaged in rotational and non-rotational shift work in a hospital through sleep charts. It was observed that non-rotational workers enjoyed more frequent and longer naps and had less disturbances in their sleep patterns than rotational workers (JPMA 40: 245 , 1990).

INTRODUCTION

Hospitals provide medical and surgical treatment facilities round the clock in the form of different working schedules such as rotational and non-rotational shift work. Most of these working schedules cover night work which involves 8.15% of the economically active population¹. Continuous or rapidly changing shifts involving night shift do influence the sleep pattern resulting in ill health due to dept. Thus – Evensen² observed that more than 50% of shift workers had developed sleep disturbances. Carpentier and Cazamain¹ reported reduction in the number of sleep hours in shift workers while in a similar study^{1,3} it was found that shift workers averaged 63 hours of sleep as compared with 7.5 hours by day workers. Similarly Wyatt and Marriot⁴ observed sleep hours when on the night shift. Sergean⁵ reported that rotational duties in a particular order has an effect on the net sleep hours. Tune⁶ found atypical sleep patterns in day workers. Koller et al⁷ noted that rotating shift workers slept less than the conventional late night to early morning shift workers. Power plant shift workers studies by Mann and Hoffman⁸ stated that sleep posed the most difficult aspects of working on rotating shifts. Physiological variations or circadian variations in such workers may or may not be adjusted but it may take from a few days to a couple of weeks⁹. It has been reported that in some cases adjustment may never occur^{10,11}. However, Kleitman¹² indicated that shift workers get less sleep than non-shift workers. This study was undertaken to make an attempt to study sleep and wakefulness patterns in a group of rotational and non-rotational shift nurses and to establish the relationship, if any, between sleep disorder and rotational shift work.

METHOD

A group of sixty female registered nurses working in a teaching hospital in Sydney initially volunteered to participate in this study. Thirty five of them worked in three rotational shifts while 25 were non-rotational workers. Sleep pattern charts covering a 28 days period were distributed for completion. The charts carried printed instructions for their use and a partially completed specimen chart was also included as a guide. It was emphasised that only the time actually spent asleep was to be recorded and not time spent awake in bed. The sleep charts used in this study were of a type previously used and described by Tune⁶. Each chart covered a period of 14 days and two charts were given to each nurse, in an attempt to get a 4 week sample. In addition, the nurses were asked to record their hours of work in the remarks column of the charts.

RESULTS

Forty-three of the sixty rotational and non-rotational workers in age group of 25-30 years were considered in this study. The remaining 17 were discarded because most of them failed to return complete data while others did not fall in the above group.

The following dependent measures were extracted from the charts:

- a. The mean duration of sleep per 24 hours.
- b. The number of disturbances of major sleep period per 24 hours.
- c. The mean duration of these disturbances per 24 hours.
- d. The number of naps taken outside the major sleep period, and
- e. The mean duration of these naps.

Disturbances of the major sleep period and naps were only taken into account when they lasted longer than 30 minutes ; any such episodes of a briefer duration were not recorded. shows that there were no significant differences between the two groups in terms of dependent sleep measures recorded, which means that rotational workers and non-rotational workers have similar sleep patterns when considered in terms of mean duration of sleep per 24 hours. The number of sleep disturbances of the major sleep period was more significant in these two groups of workers ($P < 0.05$) which showed that rotational workers had more disturbances in their sleep patterns than non-rotational workers but there was no significant difference between these groups as far as the duration of the total number of sleep disturbances was concerned. Another important finding concerned naps taken outside the major sleep period and it was found that there was a significant difference between rotational and non-rotational workers ($P < 0.05$). Non-rotational workers enjoyed more frequent and longer naps than the rotational workers.

TABLE. Sleep patterns of rotational and non-rotational workers.

| Items-Sleep pattern | Rotational workers n = 24 | Non-rotational workers n-19 | Mann-Whitney U Test (Two Tailed Test) | Results |
|---|------------------------------|-----------------------------------|--|-----------------|
| 1. Mean duration of sleep (hr) 24 hr | 7.940 | 7.786 | $U \geq 160$ | $P > 0.05$ (NS) |
| 2. Mean number of disturbances of major sleep period/4 weeks | 5.75 | 5.053 | $U \leq 133$ | $P < 0.05$ |
| 3. Mean duration of disturbances of major sleep period/4 weeks (hr) | 0.805 | 0.978 | $U \geq 145$ | $P > 0.05$ (MS) |
| 4. Mean number of naps taken outside major sleep period/4 weeks. | 5.467 | 8.263 | $U \leq 84$ | $P < 0.05$ |
| 5. Mean duration of naps taken outside major sleep period/4 weeks (hr). | 0.959 | 1.222 | $U \leq 85$ | $P < 0.05$ |

DISCUSSION

The data from this study indicate that although rotational workers reported taking a slightly longer mean duration of sleep per day than the non-rotational working controls, the difference was statistically not significant. The non-rotational workers overcame their sleep debts by taking more frequent and longer naps. Another important factor which compensated for the sleep debts in rotational workers was the longer major sleep periods on days off These findings agree in part with those of a previous study by Tune⁶. Another major finding was that non-rotational workers relied on taking naps in order to

achieve a high mean duration of sleep per day to pay off their sleep debt and the main reason given for this was the early waking to join morning duty. It was assumed that the naps taken outside the major sleep period and of longer duration are an adequate compensation for disturbed or shortened sleep. study showed that rotational workers experienced more sleep disturbances than the non-rotational workers. This could be the result of their irregular working hours and more disturbances in their sleep hours due to the surrounding working environment. It is apparent from this study that the rotational workers found it necessary to sleep more than non-rotational workers in order to overcome sleep debts and meet the criterion of 'satisfactory' sleep.

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