Short Communication (SS-1)

A STUDY OF BEHAVIOURAL CHANGES OF HEALTH OFFICIALS WORKING UNDER DIFFERENT ILLUMINATION ON NIGHT DUTIES

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ABSTRACT

Technological advancement is related to high commitments, high performances that lead to high working hours. Night time working in illuminated areas disrupts circadian rhythm and results in health hazards. In this study the effect of illumination on behavioral change on health officials was studied. The intensity of light varies from 90 to above 120 lux. The respondents reported significant change in behavior viz. lack of patience, irritation, dislike talking, glare intolerance and high pitch sound intolerance was observed in respondents working in higher illumination.

Key Words: Circadian Rhythm, Zietgeber, Melatonin, Suprachiasmatic Nuclei

INTRODUCTION

A wish of fast growth tends man to invent a huge numbers of technologies. As we are going towards higher at growth, the working hours are increasing. Now a days need to work expand more than twelve hours. Companies and factories are working in day and night. A large numbers of people working in night shift. Working areas are so illuminated and chirps like daytime. This night time illumination works as light pollution.

Studies reveal that night time lighting induces health problems by changing natural “circadian rhythm”. Circadian rhythm influences all body functions like body temperature, hormone level, heart rate, blood pressure, sleep, digestion as well as behavior also (Tortora). Our body has more than hundred circadian rhythms.

Our brain has an area called suprachiasmatic nuclei, researches reveal that this area is influenced by outside stimuli and these stimuli are called “zeitgebers”. The most obvious zeitgeber is daylight. One most powerful effect of daylight is “sleep- wake cycle”. When daylight falls on retina, it inhibits the secretion of hormone melatonin and we feel fresh and no sleepy.

In darkness melatonin production is increased and we feel drowsy and sleepy (Tortora). In that way the sleep wake cycle is maintained by daylight. This phenomena show the effect of light on health. It is obvious people who work in illuminated
areas at night tends to change their natural circadian rhythm. A change in circadian rhythm disrupts in normal body functioning, which directly or indirectly affect physical and mental health.

Today the most common complaints of night duty workers are headache, fatigue, stress, high blood pressure, insomnia, and lack of appetite etc. Brainard observed that 460-nm light is significantly stronger than 420-nm light for suppressing melatonin. Researches reveal that in later years the dreading diseases like cardiovascular diseases, cancers, ulcers as well as psychological changes were developed. Another researcher David Spigel reported breast cancer is related to night shift workers. A research conducted by DDRC in call centers of Delhi revealed graying of hair in night shift workers is due to reduced melatonin. Kloog reported intensified light is another cause of breast cancer. Leanne observed many biological and social problems associated with night shift workers.

In that way it is obvious to know whether different degree of illumination affects behavior. To know the effect of degree of illumination on change in human behavior the present study designed.

**MATERIAL AND METHODS**

The study was conducted in year 2007-08 in Bhopal city, Madhya Pradesh, India. Seventy four convenient samples of health officials of different hospitals were selected. Respondents were having frequent night duties in a week and have to work in illuminated areas all the time.

For collection of data questionnaire was prepared and the respondents were interviewed. Validity of data judged by cross examination to avoid the biasness. Due care was taken while interviewing the respondents so that the original view of respondents was not influenced by the feelings of the other fellow respondents. Interview was done in a most informal atmosphere to record the actual feeling of respondents. The intensity of illumination at workplace was recorded by lux meter at midnight hours.

**RESULTS AND DISCUSSION**

Seventy four respondents were interviewed. These all were performing night duties and worked in illuminated areas all the night. Five types of behavioral change was recorded after doing the night duties. These are irritational behaviour, lack of patience, dislike to talk to anyone, glare intolerance and high pitch sound intolerance.

**Table 1 : Percent wise distribution of behavioral change in health officials**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Behaviour</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of patience</td>
<td>38 (51.35%)</td>
<td>36 (48.64%)</td>
</tr>
<tr>
<td>2</td>
<td>Irritation</td>
<td>38 (51.35%)</td>
<td>36 (48.64%)</td>
</tr>
<tr>
<td>3</td>
<td>Dislike talking</td>
<td>28 (37.83%)</td>
<td>46 (62.16%)</td>
</tr>
<tr>
<td>4</td>
<td>Glare intolerance</td>
<td>42 (56.75%)</td>
<td>32 (43.24%)</td>
</tr>
</tbody>
</table>

Hi pitch sound and glare intolerance was recorded in maximum respondents i.e. 44 (59.4%) and 42 (56.75%) respectively. Maximum respondents i.e. 46 (62.16%) denied to dislike talking after night duty.
The irritated behaviour was found maximum in respondents having 1-3 year of service with night duties. Maximum percentage (50%) of respondents showed lack of patience have 5-7 year service. Dislike to talk after night duties was found maximum in (64.28%) among respondents having 1-3 year service. Maximum percentage of glare intolerance (67.85%) recorded in respondents having 1-3 year service. High pitch sound intolerance was recorded maximum (79.16%) in respondents having service 7 years and above. (Fig. 1).

Working with same light intensity in night duties and length of service was compared with behavioral changes.

Respondent which came in 1-3 year service category and working in 121 and above lux, maximum were reported irritational behaviour (100%), lack of patience (100%) and dislike to talk (100%). 75% respondents reported glare intolerance who were working in 80-90 lux. High pitch sound intolerance was maximum (50%) recorded in respondents working in 80-90, 111-120 and above 121 lux. (Fig. 2).
Respondent have 3-5 years service where analyzed according to illumination. 100% respondents reported glare intolerance and high pitch sound intolerance working in 121 and above lux. While maximum respondents (75%) working in 101-110 lux reported irritational behavior and dislike to talk after night duty. Lack of patience was observed maximum (50%) in respondents working in 111-120 lux. (Fig. 3).

No sufficient data as found of respondents came in 5-7 years service length. Respondents came in category of >7 years maximum (83.33%) reported irritational behaviour after night duty working under 91-100 and 101-110 lux. Lack of patience after night duty was maximum (66.66%) observed in respondents working under 101-110 lux. Dislike to talk was maximum (50%) observed in respondents working in 91-100 and 111-120 lux. Glare intolerance was maximum (66.66%) reported in respondents working in 91-100 lux. 100% respondents reported sound intolerance working under 121 and above lux. (Fig. 4).
CONCLUSION

The intensity of light exerts changes in human behavior. Respondents who have lesser length of service feel irritational behavior; dislike talking to anyone just after night duty. Glare intolerance was also reported. But high pitch sound intolerance was found in respondents having length of service more than seven years. Respondents having lesser length of service and higher illumination reported irritational behavior and lack of patience, dislike talking to anybody after night duty.

On the other hand respondents have seven and above year of service reported irritational behavior, lack of patience and dislike talking, glare intolerance after night duty working at lower illumination. But high pitch sound intolerance was observed in increasing order as service length. None of the respondents reported any type of cancer.

REFERENCES


SAVE WATER
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