Asian Journal of Home Science (December 2009 to May, 2010) Vol. 4 No. 2 : 294-295

Research Paper :

Illumination in office workstation

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Accepted : *August, 2009*

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ABSTRACT

The present study was undertaken with an objective to determine the illumination in office workstation. The structured schedule-cum-interview method was used to collect data and light intensity was measured by the Digital Luxmeter. Majority of the respondents belonged to age group of 45 years and above. Fifty seven respondents were post graduates, majority of the respondents belonged to the teaching community and seventy four per cent were having normal eye sight. Maximum number of the rooms had one door of 6x3 ft. Eighty two per cent respondents felt that the placement of controls was convenient, while 18 per cent voted as inconvenient. The amount of light at work place (t=64.45**), general light (t=67.18**) and artificial light (t=19.39**) were highly significant than the required standards. A negative significant correlation (r=0.29**) of age with illumination at work place implying that with increase in age the provision of light seems decreasing and correction are not significant.

Key words : Workstation light, General light and artificial light

Light is effective when it corresponds to the visual needs of the workers. Morris (1959) defined good lighting as "the right kind and right amount of light at the right place". Sustainable lighting helps to avoid accidents, supports to emotional and physical well being and contributes to security (Kwez and Enmarkar, 1998). Galsiu and Veitch (2006) shows artificial lighting is needed to provide task luminance and adequate visual environments to carry on the task when natural light is inadequate or not available. Good artificial illumination, prevents accidents, protects health by minimizing eyestrain and also contributes to the beauty in offices. Kiernan (1994) said that inadequate light leads to problems like lack of interest, failure to concentrate sleepiness and apparent laziness. Further eyestrain, headache, indigestion and irritability are the problems due to inadequate light. Hence, the present study was undertaken with an objective to determine the illumination in office work station.

METHODOLOGY

The study was conducted in Parbhani city of Maharashtra state during the year 2008-09. For the study, a sample one hundred and twenty five work place of subject from the Administrative Office, Collector Office, District Welfare Office, Zilha Parishad Office and Municipal Council Office etc. were randomly selected.

Digital Luxmeter was used to measure the intensity of illumination in offices. Illumination was recorded thrice in a day during working hours *i.e.* during morning 9-10 a.m., afternoon 12-1 p.m. and evening 4-5 p.m. Adequacy of light was determined by comparing the values of available light at workstation and office area with the recommended standards.

FINDINGS AND DISCUSSION

Table 1 deals with the general information of the subjects. It is evident from the table that majority of the respondents belonged to age group of 45 years and above, while 34 per cent belonged to age group of 25-45 years.

It is seen from the table that majority of the respondents belonged to the teaching community, whereas 37 per cent worked in the clerical cadre, and only eight per cent were in the administrative level. Regarding the eye sight of the respondents it is noted that seventy four per cent were having normal eye sight, while twenty six per cent were wearing bifocal lenses.

Table 1 : General information of the office workers

Sr. No.	Particulars	Frequency (%) N=100
1.	Age (years)	
	Age Group-I (25-45 year)	34
	Age Group-II (45-above)	66
2.	Type of work	
	Clerical	37
	Teaching and extension	55
	Administration	8
3.	Eye sight	
	Normal	74
	Bifocal	26

Table 2 indicates the schedule of opening of doors and windows It is cognizant from the table that maximum number of the rooms had one door of 6x3 ft, whereas only six rooms had two doors of 7x4 ft. In case of windows, seventy nine rooms had to windows of 3x3 ft, while only three rooms were having one window of 2x3 ft.

Table 2 : Schedule of openings

Sr. No.	Type of openings and number	Frequency	Size (LxW)
1.	Door-1	94	6'x3'
	Door-2	6	7'x4'
2.	Window-1	3	2'x3'
	Window-2	79	3'x3'
	Window-3	10	4'x3'
	Window-4	8	4' & above

Table 3 shows the convenience of light fixtures and requirement of artificial light. It is observed from the table that eighty two per cent respondents felt that the placement of controls was convenient, while 18 per cent voted as inconvenient. Seventy one per cent required artificial light during the day, whereas twenty nine per cent did not require artificial light during the day. With reference to the work zone requiring artificial light, 72 per cent said that they used artificial light for almost 6-8 hours, while the rest 28 per cent used artificial light for about 4-6 hours.

Table 3 : Convenience of light fixtures and requirement of artificial light

Sr. No.	Particulars	Frequency of use
1.	Convenient	82
	Inconvenient	18
2.	Requirement of artificial light during day	
	Yes	71
	No	29
3.	Work zone requiring artificial light	
	6-8 hours	72
	4-6 hours	28

Table 4 indicates the comparison of illumination levels with standards. It is clear from the table that the amount of light at work place (t=64.45**), general light (t=67.18**) and artificial light (t=19.39**) are highly significant than the required standards.

Table 5 has the correlation of independent variables with illumination. The findings indicate a negative significant correlation (r=0.29**) of age with illumination at work place implying that with increase in age, the provision of light seems decreasing and the correlations are not significant.

Table 4 : Comparison of illumination levels with standards

Particulars	Mean ± S.D.	Standard (Lux)	t value
Work station light	388.4 ± 22.5	400-800	64.45**
General light	449.6 + 27.2	800	67.18**
Artificial light	500.3 + 32.8	400-800	19.39**

** indicates significance of value at P = 0.01

Table 5 : Correlation of independent variables with illumination

Variables	Illumination at work place	General light	Artificial light
Age	-0.29**	0.00 NS	-0.17 NS
Eye sight	-0.10 NS	0.04 NS	-0.09 NS
Workplace	0.01 NS	0.05 NS	-0.14 NS

* and ** indicate significance of values at P = 0.05 and 0.01 respectively, N.S. = Non significant value.

Conclusion:

It can be observed from the study that in all offices, the illumination at work station, general illumination and artificial illumination was inadequate compared to the recommended standards. Correlation of independent variables with satisfaction indicated that except for significant value for natural light and age and correlation of independent variables with illumination, the findings indicate that feeling of comfort with artificial light is significantly correlated with general light.

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