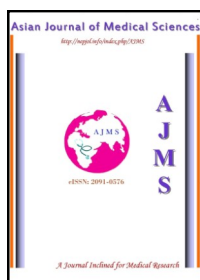


ASIAN JOURNAL OF MEDICAL SCIENCES



The Level of Awareness and Utilization of Computer Shields among Computer users in a Nigerian Community

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Abstract

Objective: This study was designed to determine the level of awareness and extent of use of computer shields among computer users in Owo, in South-West Nigeria.

Material & Methods: The subjects were selected by a simple random sampling method. Data collection was through a combination of e-mail based on-line questionnaire using the survey monkey website, and the self administered semi structured hard copy questionnaire. The information obtained from the respondents with the questionnaire included their bio-data, extent of computer use, history of ocular symptoms, awareness and utilization of computer shields. The data obtained with the study instrument was collated and analyzed using the SPSS 15.0.1 statistical software, cross tabulation of attendants results were done with chi-square test and statistical significance was set at $p \leq 0.05$.

Results: 108 of 124 selected subjects filled their questionnaire to acceptable level. There were a large number of respondents who were aware of the various types of computer shields (70.5%) (p -value 0.002). However, the utilization level was not commensurate as only 39.8% ($N= 43$) utilized any of these shields, 49.1% ($N= 53$) were none users while 11.1% ($N= 12$) did not respond (p -value 0.062).

Conclusion: Majority of the respondents were aware of computer shield. However, less than half of the respondents utilized computer shields. There is need to encourage all computer users on the use of computer shields to ensure better computer working time.

Key Words: Awareness; Computer shields; Nigeria

1. Introduction

Computer is an electronic device used in various organizations for storing, processing and management of information in accordance with a set of information.¹ It forms an integral part of modern life. It is estimated that, since 2000, 75% of daily activities of all jobs involve the use of computer.²

A shield may be defined in different forms, but based on the area of interest, it is a protective devise used to reduce the ocular effects of the use of computer. These ocular effects may include; red eyes, blurred vision, diplopia, burning sensation, irritation, and asthenopia (i.e. weakness or easy fatigue of the eyes).^{3,4} These symptoms may be called the computer visual syndrome.⁵ Computer users suffer from one or more of the above mentioned symptoms compared to non-computer users. Today, millions of children use computers on a daily basis. Extensive viewing of the

computer screen can lead to computer visual syndrome.² These symptoms may be caused by poor lighting, glare, an improper work station set-up, vision problems of which the person was not previously aware, or a combination of these factors. Children can experience many of the same symptoms related to computer use as adults. However, some unique aspects of how children use computers may make them more susceptible than adults to the development of this problems.⁵

The computer shield is a protective device of various sorts which may be internally built in the computer or externally attached. Among the available shields are the following: a) **Computer brightness control:-** This is the computer inbuilt brightness control which varies with different computers, It is the easiest and most readily available computer shield. b) **Polarized computer screen shield:-** This is a type of computer shield which unfortunately is fading out of fashion consequent to the recent advancement in technology and computer designs. It is additional polarized screen acting as light filters which is supplied by

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computer providers commonly with the desktop computers. c) **Other shields include the additional lens filters:** They are filters attached to eyeglasses to reduce the effect of light intensity on close range computer users.⁶ These filters are available as recommended on request. They are tinted lenses attached to spectacles of various shades and design depending on choice. Alternatively, protective dark goggles which may or may not be recommended depending on the refractive power of the user.

These shields have been shown by providers to reduce the prevalence of the common ocular symptoms experienced by computer users and also encourage the prolonged use of the computer for better productivity. The importance of computer shields to all computer users has informed this study to assess the level of awareness and use of the available computer shields among computer users in a Nigerian community.

2. Material and Methods

This cross-sectional study was carried out in centers where computer use was enormous and among which were the Hospital, Banks and Tertiary institutions. There are two tertiary institutions, a tertiary hospital and five commercial banks sited within the study community giving an estimated 700 computer users. Approval of the Ethical Review Committee was obtained before the commencement of this study. The sample size was estimated using the *Abraham winpepi program software 2004*. It comprised a minimum acceptable difference of 0.08; assumed proportion of 0.6, at $p \leq 0.05$ and 2% allowance for possible loss of subjects within a community with estimated computer user population of about 700; thus, assuming a sample size of 124 subjects. The subjects were selected by a simple random sampling method. Data collection was through a combination of e-mail based on-line questionnaire using the *survey monkey website*, and the self administered semi structured hard copy questionnaire. Sample subjects whose e-mail response was either incomplete or not returned were given the hard copy questionnaire. The information obtained from the respondents with the questionnaire included their bio-data, extent of computer use, history of ocular symptoms, awareness of available computer shields and extent of its use. Cross tabulation of attendants results were done with chi-square test and statistical significance was set at $p \leq 0.05$ and data obtained with the study instrument was collated and analyzed using the SPSS 15.0.1 statistical software. This study was carried out between September, 2009 to January, 2010.

3. Results

Only 108 out of the 124 subjects selected sent in complete responses after having exhausted both methods of collection giving a response rate of (87.1%). The age range of respondents was between 21 and 54 years, a mean age of 30.8. There were 65 males (60.2%) and 42 females (38.9%). The ethnicity of the

respondents revealed that 80 (74.1%) were Yorubas, 18 (16.7%) were Igbos and the remaining 9 (8.3%) belonged to the other ethnic groups. The occupation of the respondents is shown in table-1.

Table-1: Occupation of the Respondents

Occupation	Frequency	Percentage (%)
Banking	35	32.4
Health sector	49	45.4
University administrative staff	23	21.3
Non-responder	1	0.9
Total	108	100

Computer use: All the subjects selected are computer users and other information is detailed in the table-2 below. Respondents have varying duration of time spent on the computers each day and on the average; 25% spend < 6 hours (group 1 users), 57% spend between 6 hours & 12 hours daily (group 2 users) while only 18% spend > 12 hours (group 3 users).

Table-2: Level of awareness & utilization of computer shield

	Frequency (N)	Percentage (%)	p- value
Computer visual symptoms	70	64.8	0.023
Awareness of Computer shields	74	70.5	0.020
Utilization of shields	43	39.8	0.062
Symptom relieve shown among computer shield users	75	75.5	0.019

70 respondents (64.8%) complained of one or more computer associated symptoms (42 of them are group 2 users, 19 are group 3 users and 9 respondents are group 1 users), 36 respondents (34.4%) were computer symptoms free and one respondent (0.9%) gave no answer. Computer distance of < 50 cm is also shown to be a factor to the symptoms experienced.

Computer shields: Awareness level was about 70.5% (N=74) giving a p-value of 0.02, S.D= 0.458, and a mean value of 1.30, showing that it is statistically significant. However, the utilization level was not commensurate as only 39.8% (N= 43) respondents make use any of these shields, a p-value of 0.062, showing a statistically insignificant level of computer shield users. 55.5% (N=60) were none users while 4.6% (N=5) did not respond. Among the users, only about 23% were frequent users while majority (58%) were occasional users. Most of the respondents adduced the infrequent use to forgetfulness or poor knowledge of the computer brightness control and unavailability of the other shields. The most used shield was the computer brightness control (16% among the 39.8% as shown above) while the temporary additional lenses were the least used (6% among the 39.8%). Symptoms relieve experienced by computer shield users has enhanced computer working time

and better productivity. 95.3% of respondents indicated strongly that the use of computer shields should be adopted and attached to every computer in public and private establishment with a p-value of 0.011 which is statistically significant.

4. Discussion

Majority of our respondents were Yorubas and this could be attributable to the fact that the study community is a Yoruba community located in South-West Nigeria.

A total of 124 responses were received but only 108 responses were filled to an analyzable level. The age range of respondents was in keeping with the working age group of Nigeria. All the recruited subjects were frequent computer users utilizing the computer either at home, office and cybercafé. Majority of users spent between 6 hours and 12 hours on the computer and a considerable number of symptoms complainants were from this group. Computer use in Nigeria has attained a significant patronage especially with the upsurge of Information and Communication technology (ICT) system, as most companies and organization barely manage their businesses without it due to its expansive advantages. However, poor publicity and utilization of computer shields has somewhat hampered their effectiveness due to the overwhelming symptoms experienced by some users, some of which were dry eyes, ocular ache and blurred vision, refractive errors etc.

A study done in Ilorin, kwara state, Nigeria, by Adepoju et al revealed that 63% of computer users had asthenopia compared to 18.7% of the control group.⁷ Similar findings were also reported by Onyekonwu et al in a study carried out in Enugu, Nigeria.⁸ This symptomatic effects of computer use without the shield can also be seen in other parts of the world as shown in a study done at Isfahan, Iran by Dehghani et al who reported that 79% of the study group had burning sensation and tearing, 60% had dry eyes and 65% had asthenopia in comparison with non computer users (control group) 42.8%, 32.2% and 39.3% respectively.⁹ Computer visual syndrome (CVS) may result to loss of visual activity¹⁰ especially from asthenopic symptoms¹¹ causing refractive error which is a common cause of blindness.

In this study, it was shown that more symptoms were noticed amongst the computer use's in the university and hospital staffs compared to the bankers who tend to be longer computer users. Reasons may be assumed to fear of subjects not exposing their possible ocular deficiencies. Otherwise, adaptation to the frequent computer use may be responsible.

A large number of respondents were aware of the various types of computer shields but surprisingly, only very few utilized these shields with fewer frequent users. The frequent users recorded a significant improvement or eradication of their previous

complaints with resultant increased computer working time. The non use of shield is commoner with the users of laptops computers and newly designed flat screened desktops which do not come with the polarized screens compared to the old desktop models and these users are the major complainants. Some respondents were generally indifferent to the use of shields as they feel comfortable without it and experienced little or no computer visual symptom. However, most respondents were supportive of the adoption of computer shield use based on comfort. This finding should be worked on by policy formulators so as to promote the use of computer shields.

The frequency of use computer shields has a causal relationship with symptoms relieve, which in turn, increased computer working time and better productivity for computer based jobs. There was no internet published research found by the author's on awareness and/or use of computer shields in relation to ocular symptoms, thus, making comparison with other results difficult.

The poor access to the internet or owning of an existing e-mail by respondents especially in the hospital system was a major draw back to the research as it increased the cost of the study amongst other things by the production and distribution of the hard copy questionnaire.

5. Conclusion

Majority of the respondents were aware of computer shield. However, far less than half of the respondents utilized computer shield with a consequent increased ocular symptoms. The most used computer shield was the computer brightness control.

It is therefore recommended that:

- a) Ensuring a computer working distance to about 1 meter or more away from the user. This may be optimized by the use of external key board for computer users.
- b) Mandating the computer providers to make provision for various computer shields to be attached to computers.
- c) Children are more vulnerable to computer visual syndrome, thus, parents should enforce the use of computer shields at homes and schools to encourage adaptation to its use and prevent computer visual syndrome.
- d) Employers should educate workers on the use of computer shields.

Acknowledgement

The authors appreciate Mr. D. Balogun (Ophthalmic nurse, Federal Medical Centre, Owo) for his assistance. We are also grateful to the management and staff of the centers used for the research and finally the respondents for graciously accepting to participate in this study.

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