Extent of Health Problems Experienced by Computer Users in Vigan City

Gemma Agnes R. Supnet, MST
Rebecca N. Rios

Abstract

This study was conducted to determine the health problems experienced by computer users in Vigan City. It also sought to determine the socio-demographic profile of the respondents such as age, sex, educational attainment, place of work and monthly family income, computer-related factors like number of hours of computer use per day, room lighting, posture when using the computer, distance of monitor, use of antireflective screen, ventilation, reasons for using the computer, and the level of practice on the proper techniques of computer use.

The study involved 137 respondents from Vigan City. A questionnaire was the main tool used to gather data for the study. Data gathered were analyzed and interpreted using frequency, percentage, mean, and simple correlational analysis.

The respondents are young male students who are mostly high school graduates, and have an average family monthly income. Further, the respondents spent less than 1 hour of computer use in a day, have adequately lighted rooms when using the computer, maintain more than 2 feet distance from the monitor, use antireflective screens, have electric fans as source of ventilation, and use the computer to make school projects.

There is a "high" level of practice on the proper techniques of computer use.

The extent of health problems experienced by computer users in Vigan City is "very light".

There is a significant relationship between the extent of health problems and the number of hours of computer use per day and the level of practice on the proper techniques of computer use.

Based on the conclusions, the researchers forward the following recommendations: the respondents should maintain the high level of practice on

the proper techniques of computer use and a similar study should be conducted to include more variables and a wider scope of respondents.

Introduction

Background of the Study

Technology has definitely made our lives easier. Today, **we are** overwhelmed by computers and have perhaps begun to look at it as an "everything appliance".

Computers have replaced the humble typewriter to become much more than a useful piece of machinery. Computers have become smaller, easier to use and blazingly fast. With the World Wide Web available to all, it has become a center of attention and familiar part of a man's daily life. Installation of speakers and CD Roms into these machines enables them to give the people music. They can become instant televisions and movie screens when video drivers are present. Attachment of microphones can also make computers instant telephones.

Millions of people around the world use computers as their primary business tolls in the last decade or so, and the number of hours people spent on computers have increased tremendously.

Setting aside the pleasures and benefits one can get on computers are the hannful effects they bring. The ill effects of the computer are grossly underrated. Aside from burning a hole in one's pocket with the high telephone bills and internet hours one consumes, computers can cause health problems.

Ccmputer–related health problems are caused by improper use and lack of knowledge about "safe-computing techniques". Some of the noted common problems related to computer use are Carpal Tunnel Syndrome, Repetitive Strain Injury, Computer Eyestrain and Computer Vision Syndrome.

As more and more work, education, and recreation involve computers, everyone needs to be aware of the hazards it can cause.

This can be a serious and painful condition that is far easier to prevent than cure once contracted. It can affect even the young and the physically fit individuals.

It is the aim of this study to identify the health problems experienced by computer users in their daily work. It also aims to identify if computer users follow the correct techniques in operating their computers.

Data gathered in this study will serve as a baseline data to conduct further studies. As health professionals, the results of the study will also help in devicing strategies for offices and other establishments in coming up with guidelines on the proper use of computers.

Statement of the Problem

General

The study aims to determine the health problems experienced by computer users in Vigan City.

Specific

1. What is the profile of the respondents in terms of the following
   a. socio-demographic factors:
      1. age
      2. sex
      3. education attainment
      4. place of work
      5. monthly family income
   b. computer-related factors
      1. number of hours of computer use per day
      2. room lighting
      3. posture
      4. distance from monitor
      5. use of antireflective screen
      6. ventilation of room
      7. reasons for using the computer
2. What is the level of practice of the respondents on the proper techniques of computer use?
3. What is the extent of health problems experienced by computer users?
4. Is there a significant relationship between the extent of health problems experienced by computer users and the following variables:
   a. socio-demographic factors
   b. computer-related factors
   c. level of practice of the respondents

Scope and Delimitation

The study detennined the extent of health problems experienced by computer users in Vigan City

The independent variables are the following: a) socio-demographic factors such as age, sex, educational attainment, place of work, and monthly family income b) computer-related factors like number of hours of computer use in a day, room lighting, posture, distance from monitor, use of anti-reflective screen, ventilation of room and reasons for using computer, c) level of practice on the proper techniques of using the computer. The dependent va;iable is the extent of health problems experienced by computer users.

The study made use of a questionnaire as the main instrument for gathering data. Frequency, percentage, mean, and simple correlational analysis were used to statistically treat the data in the study.

Review of Related Literature

Computers can have a variety of effects on those who use them. A first category of effects includes clear physical effects – ailments of the eyes, skin, muscles and joints. These effects have been documented and their causes are well understood.

A second category of effects is thought to be caused by the electromagnetic fields produced by a computer monitor and other video display terminals (VDTs) A small body of research suggests that pregnant women exposed to these fields may face an increased risk of spontaneous abortion (miscarriage). Other studies suggest links between exposure to electromagnelic fields and leukaemia and cancers. Most of the evidences for these radiation effe,:ts come from epidemiological studies – surveys, hospital records, and so on – rather than clinical or laboratory work (Marriott, 1986).

A study conducted by the National Institute for Occupational Safety and Health in the United States, involved samples of about 4200 women telephone operators half of whom used VDTs and half of whom did not. The study looked into the number of spontaneous ubortions in each group over several years. In brief, the report concluded that in the study groups there was no association between spontaneous abortion and exposure to VDTs and the electromagnetic fields that they generate.

Many of the effects ascribed by VDT radiations are difficult to substantiate. According to a Yale physicist, Dr. Robert Adair, the mechanisms by which VDT radiation could cause medical problems are difficult to imagine. Adair pointed out that electromagnelic disturbances caused by VDT radiation are less intense than those resulting

from a leisurely walk across the lines of force of the earth's magnetic field. Despite the conclusions of the NIOSH report and the reassurances of Adair, a vocal group of public health activities continues to question the effects of electromagnetic fields. Human senses can not detect electromagnetic fields, and some of their suspected effects -- miscarriage and cancers show up for months or years (Brodeur, 1989).

Computer-related health problems are caused by improper knowledge about safe computing techniques.

Keyboard and Mouse

Improper use of keyboard and mouse can cause ailments generally referred to as Repetitive Stress Syndrome (RSI), repetitive motion injuries or repetitive strain injuries which involve the wrists, arms, neck, back or shoulders.

Proper typing is one of the best ways to prevent RSI. Typing key combinations by contorting one hand often leads to numbness, tingling, or loss of feeling in the little fingers.

Twisting hands put strain on them. Resting on a wrist rest, the table, or arm rest while typing forces one to twist the hands to reach some keys. It is better to keep hands moving freely from the keyboard, letting the strong muscles of the arms move the hands. Rest on the wrist rest only when not typing.

Sit centered on the part of the keyboard which is used the most. Do not sit centered on the number pad if not in use.

The key to healthy hands has more to do with how work is done and how often breaks are taken rather than what type of keyboard is used.

Monitors

Looking at the monitor for extended periods can cause eyestrain. Eyestrain means different things to different people. It may be experienced as burning, tightness, sharp pains, dull pains, watering, blurring, double vision, headaches and other sensations depending on the person.

Keep the monitor as far away as one can read comfortably. Conventional wisdom to monitor height is that the top of the screen should be about at eye height. Many people find a low monitor to be more comfortable for the eyes and neck.

Proper lighting for the work area is important. Lighting should be indirect and even. Don not aim a light at reference documents (Cottrell, 1990).

Conceptual Framework

The researchers were guided by the research paradigm presented below

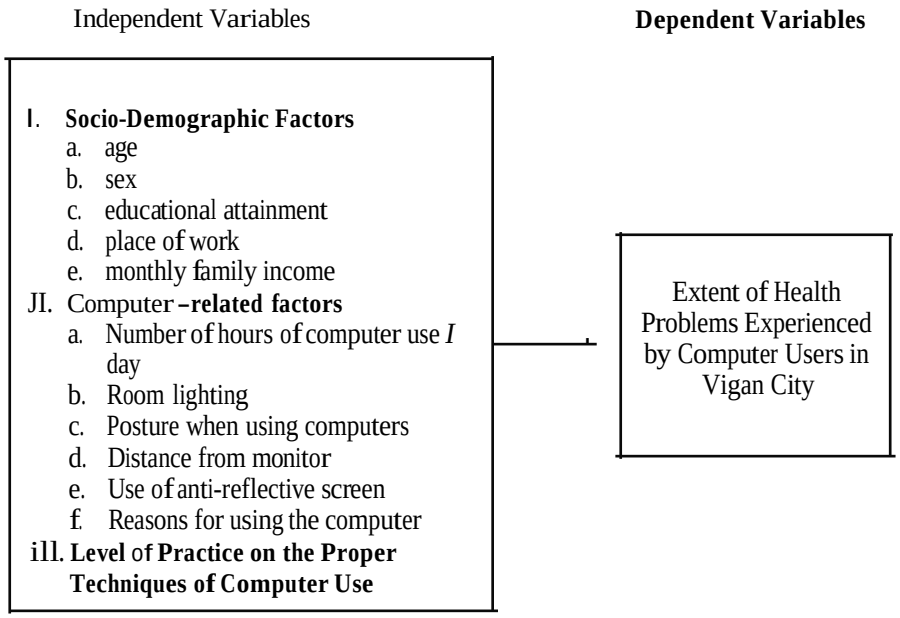

Figure 1

The **Research Paradigm**

The conceptual framework showing the relationship between the socio-demographic factors, computer-related factors, level of practice on the proper techniques of computer use, and the extent of health problems experienced by computer users in Vigan City.

Methodology

The study made use of the descriptive correlational type of analysis. A questionnaire formulated by the researchers was the main instrument used in gathering data needed in the study.

Part I of the questionnaire dealt on the socio-demographic and computer-related factors.

Part 2 of the questionnaire gathered information on the respondents' level of practice on the proper techniques of computer use.

Part 3 of the questionnaire gathered information on the extent of health problems experienced by computer users.

Population **and Sample.** The population of the study were the computer users from Vigan City. Convenient sampling was used to select the respondents.

Statistical Treatment of Data

Frequency and percentages was used to describe the socio-demographic and computer related factors.

Mean was used to describe the level of practice of the respondents on the proper technique of computer use.

Simple correlational analysis was used to detennine the relationship between the socio-demographic factors, computer-related factors, level of practice on the proper use of the computer, and the severity of health problems experienced by computer users.

Results and Discussions

Socio-Demographic Profile of the Respondents

Table la shows the socio-demographic profile of the respondents.

Table 1a. Socio-demographic profile of the respondents

Socio-Demographic Factors	F	%
A, le		
10 -15	40	29.2
16-20	59	43.1
21-25	8	13.1
26-30	9	6.6
31-35	5	3.6
36-40	6	4.3
Total	137	100
Sex		
Male	74	54.1
Female	63	45.9
Total	137	100
Educational attainment		
Masters degree	5	3.6
BS Graduate with MA	3	2.2
College graduate	30	21.9
Vocational	10	7.2
HS Graduate	52	38
Elementary graduate	37	27
Total	137	100
Place of Work		
Office	20	14.6
Bank	3	2.2
Internet cafe	15	10.9
School	10	7.4
Others (students)	89	64.9
Total	137	100
Monthly Family Income		
Above 20,001	21	15.3
15,001-20,000	37	27.0
10,001-15,000	35	25.5
5,001 – 10,000	21	15.3
1,001—5,000	18	13.1
Less than 1,000	5	3.6
Total	137	100

Age. Table la reveals that most of the respondents (59 or 43.1%) belong to the age bracket of 16-20 years. The least of the respondents (S or 3.6%) are 31-35 years old.

Sex. Seventy four (74 or 54.1%) respondents are males and sixty three (63 or 45.9%) are females.

Educational **Attainment.** A greater percentage of the respondents (52 or 38%) are high school graduates while only three (3 or 2.2%) respondents are BS graduates with Master's units.

Place of **Work.** Majority of the respondents (89 or 64.9%) are still not working or are still students while only three (3 or 2.2%) are bank employees.

Monthly Income. Most of the respondents (37 or 27%) have a monthly income from 15,001 – 20,000. The least of the respondents (5 or 3.6%) have a monthly income of less than 1,000.

Table 1b presents the profile of the respondents in tenns of computer-related factors.

Number **of hours of computer use /day.** It can be seen from Table 1b that most of the respondents (51 or 37.2%) spend less than one hour using the computer. Only three (3 or 2.2%) use the computer for 11-15 hours.

Room Lighting. Majority of the respondents (127 or 92.7%) have rooms which are adequately lighted when using the computer. Only ten (10 or 7.3%) have rooms which are inadequately lighted.

Posture When Using the Computer. A greater number of the respondents (127 or 93.4%) sit up straight when using the computer while only nine (9 or 6.6%) have **a** slouching posture when using the computer.

Distance from the Monitor. Sixty five (65 or 47.4%) respondents have a distance of more than 2 feet away from the monitor and twenty seven (27 or 19.7%) respondents have a distance of 2 feet away from the monitor.

Use of antireflective screen. Sixty three (63 or 45.9%) of the respondents use antireflective screens on their monitors while seventy four (74 or 54.1%) do not use antireflective screens.

Table 1b. Distribution of respondents in terms of computer-related factors

Computer-Related Factors	F	%
Number of Hours of Computer Use/ Day		
Less than 1 hour	51	37.2
1-5 hours	50	36.5
6-10 hours	28	20.4
11-15 hours	3	2.2
16-20 hours	5	3.6
21-24 hours		
Total	137	100
Room Lighting		
Adequately lighted	127	92.7
Inadequately lighted	10	7.3
No light at all		
	137	100
Posture when using the Computer		
Sit up straight	128	93.4
Slouching	9	6.6
With raised feet		
Total	137	100
Distance From Monitor		
Less than 2 feet	45	32.8
2 feet away	27	19.7
More than 2 feet away	65	47.4
Total	137	100
Use Anti-reflective screen		
Yes	63	45.9
No	74	54.1
Total	137	100
Ventilation of Room		
Air-conditioned	57	41.6
Electric fan	68	49.6
None	12	8.8
Total	137	100
Reasons for Using Computer (Multiple Response)		
Work-related	38	21.7
School projects	99	72.3
Games	95	69.3

Ventilation. Most of the respondents (68 or 49.6%) have electric fans as source of ventilation when using the computer while only twelve (12 or **8.8%)** respondents have no ventilation when using the computer.

Reasons for using the Computer, Ninety nine (99 or 72.3%) respondents use the computer to make school projects and thirty eight (38 or 27.7%) use the computer to accomplish their work.

Level of Practice of the Respondents on the Proper Techniques of Computer Use

The level of practice of the respondents on the proper techniques of computer use is shown on Table 2.

Table 2 shows that overall, there is a "high" (=3.98) level of practice on the proper techniques of computer use.

The following techniques are "always" practiced: " make effort to blink frequently to prevent eyes from getting dry" (=4.30); "sit up straight" (X=4.59); and "use a keyboard layout that is standard" (=4.93).

The following techniques arc practised "very often": "make sure that the computer screen is 20-24 inches away from eyes and about 20 degrees below the eye level" (=3.98); "focus on distant objects to relax muscles every 15 minutes" (x=4.0); "use an antireflective filter on the screen" ($ =3.82); "dust off the screen" (=3.99); " adjust the brightness control on the screen until they are comfortable to the eyes" (=4.04); "position keyboards so that the hands are not bent uncomfortably upward to reach the keys" (=4.15); "make sure that there is enough desktop for work papers and other equipment" (X= 3.89); "use a keyboard which has been in place" (=4.08); "there is enough space for resting the wrists during keyboard use" (5=4.0); "use a chair with a backrest that provides good, firm, and comfortable support for the back" (=3.47) and "the chair height is adjustable" (5=3.43).

Lastly tie following techniques are "Often" practised: "keep document holder close and placed at the same height as the PC screen" (X=3.30); and, "the screen height is adjustable" (=3.34).

The results imply that the respondents are following the correct techniques in using the computer and its parts like the monitor, keyboard, and chair.

Table 2. Mean **ratings showing the level of practice o! proper techniques of computer use**

Items	Mean	DR
1. Make sure that the computer screen is 20-24 inches away from eyes and about 20 degrees below eye level.	3.98	VO
2. Keep document holder close and placed at the same height as the PC screen.	3.30	O
3. Focus on distant objects to relax muscles every I5 minutes.	4.0	VO
4. Use an anti-reflective filter on the screen.	3.82	VO
5. Make effon to blink frequently to prevent eyes from getting dry.	4.30	A
6. Dust off the screen.	3.99	VO
7. Adjust the brightness control on the screen until they are comfortable to the eyes.	4.04	VO
8. Position keyboards so that the hands are not bent uncomfortably upward to reach the keys.	4.15	VO
9. Sit up straight.	4.59	A
10. Make sure that there is enough desktop for work papers and other equipment	3.89	VO
11. The screen height is adjustable.	3.34	O
12. Use a keyboard which has been secured in place.	4.08	VO
13. Use a keyboard layout that is standard.	4.93	A
14. There is enough space for resting the wrists during keyboard use.	4.0	VO
15. Use a chair with a backrest that provides good, firm, and comfortable support for the back.	3.47	VO
16. The chair height is adjustable.	3.43	VO
Overall	3.96	HIGH

Legend:	Item	Overall
4.21-5.00	Always	Very High
3.41-4.20	Very often	High
2.61-3.40	Often	Fair
1.81—2.60	Seldom	Low
1.00—1.80	Never	Very Low

Extent of Heaith Problems of the Respondents on the Use of Computers

Table 3 presents the extent of health problems experienced by computer users in Vigan City.

Table 3, Mean ratings showing the extent of problems on computer use.

Items	Mean	DR
1. headache	1.71	Very light
2. eyestrain due to computer use	2.26	Light
3. blurring vision	1.04	Very light
4. tingling. numbness of fingers. hauds, wrists	1.07	Very light
5. loss of mobi:ity in any part of the hands or wrists	1.00	Very light
6. neck strain	2.32	
7. backaches	2.33	Light
8. sterility	1.01	Very light
9. miscarriage	1.01	Very light
10. addiction to computer use	1.93	Light
Overall	1.43	**Very light**

Table 3 reveals that the extent of health problems experienced by computer users in Vigan City is "very light" (=1.43)

Specifically, the respondents experienced "light" health problems like eyestrain due to computer use (&=2.26), neck strain (=2.32), backaches (X= 2.33) and addiction to computer use (=1.93).

The folJowing health problems affect the respondents "very lightly": headache (=1.71), blurring vision (= 1.04), tingling, numbness in the fingers, hands, wrists and forearms (=1.07), sterility (a= 1.0)), and miscarriage (=1.01)

The respondents suffer much very light health problems maybe because they are following the correct techniques on computer use.

Significant Relationship Between the Extent of Health Problems Along Socio-Demographic Factors, Computer-related Factors and Level of Practice on the Proper Techniques of Computer Use

Table 4. Correlation coefficients showing the relationship between the extent of health problems on computer use and socio-demographic factors

Variables	r-value	prob	Decision
Age	-.053	.321	Do not reject Ho
Sex	-.174	.122	Do not reject Ho
Educational attainment	-.072	.528	Do not reject Ho
Place of work	-.081	.232	Do not reject Ho
Monthly Income	-.034	.566	Do not reject Ho

Table } reveals that there is no significant relationship between the extent of health problems and age (r= .321), sex (r=.122), educational attainment (r = .528), place of work (r=.232) and monthly income (r=.566).

This implies that the extent of health problems experienced by computer users is the same whether they are young or old, male or female, with high or low educational attainment, whether they work in banks, internet cafes or schools and whether they have high or low monthly income.

Table 5 shows the relationship between the extent of health problems on computer use and computer related factors and level of practice on the proper techniques of computer use.

Table 5, Correlation coefficient showing the relationship between the extent of health problems on computer use and the computer related factors and the level of practice on the proper techniques of computer use.

Variables	r-value	r:prob	Decision
No. of hours of computer use/ day		.032	Reject Ho
Room Lighting	-.135	.231	Do not reject Ho.
Posture when using the Computer	-.060	.596	Do not reject Ho.
Distance From Monitor	-.134	.237	Do not reject Ho.
Use of Anti-Reflective Screen	.054	.634	Do not reject Ho.
Ventilation of Room	-.115	.308	Do not reject Ho.
Reasons for Using the Computer	-.052	.648	Do not reject Ho.
Level of Practice	-.288°	.042	Reject Ho.

- Correlation is significant at the 0.05 level

It can be gleaned from Table 5 that there is a significant relationship between the extent of health problems and the number of hours of computer use per day (r= .240). This implies that the longer the hours of computer use by the respondents, the more severe the problems that they will experience.

There is also a significant relationship between the extent of health problems on computer use and the level of practice on the proper techniques of computer use (r=-.288). This implies that the better the practice that the respondents follow on the proper use of computer, the lesser the extent of health problems that they will experience.

Conclusion

Based on the aforementioned findings, the following conclusions were drawn:

1. The respondents are young, male students who are mostly high school graduates and have an average family monthly income. Further, the respondents spent less than 1 hour of computer use in a day, have adequately lighted rooms when using the computer, maintains more than 2 feet distance from the monitor, uses antireflective screens, have electric fans as source of vemilation and use the computer to make school projects.
2. There is a "high" level of practice on the proper techniques of computer use.
3. The extent of health problems experienced by computer users in Vigan City is "very light".
4. There is a significant relationship between the extent of health problems and the number of hours of computer use per day and the level of practice on the proper techniques of computer use.

Recommendations

Based on the conclusions, the researchers forward the following recommendations:

1. The respondents should maintain tile high level of practice on tile proper techniques of computer use.
2. The extent of health problems among the computer users should be maintained at a "very light" level. One way of doing this is to conduct dissemination campaigns on the possible problems that computer users may experience and possible ways on how to prevent these problems.
3. A similar study should be conducted to include more variables and a wider score of respondents. One possible study is to conduct the common health problems experienced by a group of respondents using computers like pregnant women, students, office workers, etc.

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