Impact of Computer on Human Health

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Abstract

As computers become part of our everyday life, more and more people are experiencing a variety of ocular symptoms related to computer use. These include eyestrain, tired eyes, irritation, redness, blurred vision, and double vision, collectively referred to as computer vision syndrome. The effect of CVS to the body such as back and shoulder pain, wrist problem and neck pain. Many risk factors are identified in this paper.

Primary prevention strategies have largely been confined to addressing environmental exposure to ergonomic risk factors, since to date, no clear cause for this work-related neck pain has been acknowledged. Today, millions of children use computers on a daily basis. Extensive viewing of the computer screen can lead to eye discomfort, fatigue, blurred vision and headaches, dry eyes and other symptoms of eyestrain. 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 these problems.

In this research we took the adult and children as a case study, questioner are made to rich this research and finally some preventions are listed to immune from the impact of computer..

Keywords: computer eye syndrome, dry eyes, childhood, neck pain

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تاثير الحاسوب على صحة الانسان

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الملخص :

بعد أن أصبحت أجهزة الحاسوب جزءاً من حياتنا اليومية ،فأن العديد من الناس يعانون من مجموعة متنوعة من الأعراض جراء أستخدام جهاز الحاسوب ومنها الاعراض العينية وتشمل (أجهاد العين ، العيون المتعبة ، تهيج ، الأحمرار ، عدم وضوح الرؤية والرؤية المزدوجة) ويشار الى هذه الأعراض مجتمعة بأسم متلازمة رؤية الحاسوب . كذلك يؤثر الحاسوب على جسم الانسان مثل (ألم الظهر والكتف ، مشاكل الرسغ وألآم الرقبة) وقد تم تحديد العديد من العوامل الخطرة في هذا البحث.

إن استراتيجيات الوقاية الأولية تقتصر الى حد كبير على معالجة العوامل البيئية التي تؤثر على استخدام الحاسوب من قِبل الانسان .منذ ذلك الحين الى يومنا هذا لا يوجد سبب واضح لألآم الرقبة المتعلقة بالعمل على جهاز الحاسوب .

اليوم الملايين من الأطفال يستخدمون أجهزة الحاسوب بشكل يومي ، وعليه فأن التركيز الكبير على شاشة الحاسوب يمكن أن يؤدي الى (عدم أرتياح العين ، التعب وعدم وضوح الرؤية ، الصداع ، جفاف العين وغيرها من أعراض أجهاد العين) وقد يكون سبب هذه الأعراض هو (سوء الأضاءة ، الوهج ، مكان عمل غير مناسب ، مشاكل في الرؤية لم يكن الشخص على علم بها مسبقاً ، أو مزيج من هذه العوامل).

يمكن للأطفال التعرض لنفس الأعراض المتعلقة بأستخدام الحاسوب مثل البالغين ، مع ذلك قد تكون بعض الجوانب لكيفية أستخدام الأطفال لأجهزة الحاسوب تجعلهم أكثر عرضة من البالغين للأصابة بهذه المشاكل.

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في هذا البحث تم اخذ مرحلة الطفولة والشباب والبالغين كحالة دراسية، وتم عمل استبيان لاغناء البحث واخيرا تم عرض بعض الاحتياطات للوقاية من تاثير الحاسوب.

1. Introduction

Initially, computers were used almost exclusively by adults. Today, millions of children use computers on a daily basis at school and at home, both for education and recreation. Although the visual impact of computer use has been studied in adults, only a few studies have investigated the same issue in children.

In the late 90s, as we are now in, we are once again challenged by the usage of the mouse, and in particular our habits of work. The incidence of muscular and spinal related problems related to insidious, microtraumatic work, which is repetitive and cumulative, has been coined CTS or Cumulative Trauma Syndrome[1].

Work-Related Musculoskeletal Disorders (WRMSD) are injuries or disorders of musculoskeletal tissues associated with workplace risk factors and are known by a variety of terms, including cumulative trauma disorders, repetitive strain injuries and overuse injuries[2,3,4]. For people who spend a great deal of time using computers, WRMSDs of the neck are a common problem[5,6]. The term Work-Related Neck Pain (WRNP) is employed in this paper; "computer" refers to desktop and laptop or notebook personal computers, video display units, and video display terminals, to include the use of keyboards and pointing devices (i.e., mice, trackballs)[7].

Neck pain is defined in this paper as pain experienced from the base of the skull (occiput) to the upper part of the back and extending laterally to the outer and superior bounds of the shoulder blade (scapula). Epidemiological evidence appropriate to WRNP associated with computer use is reviewed; individual, social, behavioral, and psychological issues relevant to WRNP are presented; and preventive and health policy strategies that may be considered to assist in controlling the problem of WRNP are suggested[7].

Children can experience many of the same symptoms related to computer use as by adults. Extensive viewing of the computer screen can lead to eye discomfort, fatigue, blurred vision and headaches, dry eyes and other symptoms of eyestrain. 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. In most cases, symptoms occur because the visual demands of the task exceed the visual abilities of the individual to comfortably perform the task[8,9]. However, some unique aspects of how children use computers may make them more susceptible than adults to the development of these problems.

2. Negative Effects of Computers on Children

Children are exposed to computers at an early age and some even children know more than their parents about computers. However, regular computer use can have some negative effects on children, especially those that frequently use computers for extended periods of time[10,11].

2.1 Visual Problems[10]

Extended computer use deprives children of physical activity, increasing their risk of obesity. Studies have found that children do not spend less time in front of the television to compensate for the increased amount of time spent in front of the computer.

Furthermore Some children who frequently use the computer may be at risk for developing vision problems. Children can be even more susceptible than adult to developing eye discomfort, fatigue, headaches and blurred vision. One reason this may occur is that a child may be more apt to ignore problems when they are viewing a computer screen. For example, an adult that is having problems with glare when viewing a computer screen may try to adjust the screen to

reduce the glare. A child will not do this. Instead, a child will simply adapt to the problem. This can cause increased stress on their vision and can potentially lead a child to needing glasses at an early age. These potential vision difficulties can also interfere in a child's ability to do schoolwork or read.

2.2 Physical Decline[10]

Hours behind a keyboard can take a heavy toll on children's' bodies. It can cause delays and strain on their developing musculoskeletal system. It also takes away time that a child usually spends out playing, which help children to grow stronger physically. This lack of exercise may lead to weight control problems. In addition, a large number of children already suffer from obesity and computer use may only worsen the problem. Another physical problem is that computers emit vapors that sometimes cause skin conditions and ear, nose and throat problems .

2.3 Exposure to Adult Topics[11]

One of the more serious negative effects of computers on children is the possible exposure to adult topics or topics that are beyond their understanding. As children become more educated about computers, they venture into areas reserved for adults alone. Increased exposure to topics that are beyond the child's comprehension is corrupting their intellectual, social and moral development. For parents, it is extremely important to monitor a child's use of the computer .

3. Computer Eyestrain in Children[12]

Students' uses of computers are a daily activity in many schools. This is to keep up with the fast moving world of technology, research, and science. Researchers have come to an agreement that this could actually be harmful, if not properly managed, for the children of our future generation. The question of today is if it puts our children's vision at risk for the problems we see in adults.

It may be hard to believe but children are just as likely to develop eyestrain from frequent computer or television use as adults are. As more and more educational facilities incorporate computers in the classroom, and more children use computers to do their homework, the prevalence of visual disturbances in children is rising.

Computer-related eye strain is so common in children in fact it has its own name: Vision Syndrome or CVSC (Computer Vision Syndrome in Children). If the child spends more than one hour each day on the computer, the chances are high they may suffer from CVSC.

Often children need to spend less time at a computer or in front of a television to reduce the odds they will suffer from computer eyestrain. To help improve the odds your child will avoid spending long hours in front of a computer, put a family computer in a central and highly visible location, and be sure to monitor your child's time at the computer. You can even set a timer so your child knows exactly when their time at the computer is up.

4. The Short and Long Term Effects of Computers on Your Vision[13]

Visual symptoms are the most common complaints associated with prolonged computer use. We investigated effects of accommodation and mergence demands specified by the computer monitor, many of people find themselves waiting in the office of an eye care provider after experiencing trouble seeing, pain in the eyes or constant tension headaches. Most often people find they have trouble seeing the fine letters on their computer screen, which affects their work. For many people routine use of computers results in various symptoms including:

1. Eye Strain
2. Headaches
3. Blurry Vision
4. Fatigue
5. Dry Eye

6. Tension In Head, Neck and Shoulders
7. Excessive Tearing
8. Sharp Pain in Eyes
9. Double Vision
10. Dizziness
11. Nausea

While some of these symptoms may seem odd, they are all very common among computer users. If for example you work in an office without windows, you may find you succumb to frequent headaches resulting from eyestrain and stress. All of these symptoms can lead to frustration, increased irritation and an inability to complete work as efficiently as one might without proper eye care.

5. Limitation for Children

Children use the computer a lot for several reasons, and also do not know the risks of using it ,so we have to clarify these limits and risks as follows

5.1 The Limited Degree of Self-Awareness of Children

Most of children keep performing an enjoyable task (e.g. playing video games) with great concentration, for many hours, until exhaustion, with few, if any, breaks. Prolonged activity without a significant break can cause accommodative problems and eye irritation. Accommodative problems may occur as a result of the eyes' focusing system "locking in" to a particular target distance. In some cases, this may cause accommodation spasm[8].

Eye irritation may occur because of poor tear distribution over the eye due to reduced blinking. Blinking is often inhibited by concentration and staring at a computer or video screen. Compounding this, computers usually are located higher in the field of view than traditional paperwork. This results in the upper eyelids being retracted to a greater extent. Therefore, the eye tends to experience more than the normal amount of tear evaporation resulting in dryness and irritation[8,15].

5.2 The Adaptability of Children[1]

Although there are many positive aspects to their adaptability, children frequently ignore problems. A child who is viewing a computer screen with a large amount of glare often will not think about changing the computer arrangement or the surroundings to achieve more comfortable viewing. This can result in excessive eye strain. Also, children often accept blurred vision caused by a refractive error, because they think everyone sees the way they do. Uncorrected hyperopia can cause eye strain, even when clear vision can be maintained .

5.3 The Use of an Adult Computer[1]

Since most computer workstations are arranged for adult use, computers do not fit them well. Therefore, a child using a computer on a typical office desk often must look up further than an adult. Since the most efficient viewing angle is slightly downward about 15 degrees, problems with binocular vision can occur. In addition, children may have difficulty reaching the keyboard or placing their feet on the floor, causing arm, neck or back discomfort.

6. The Impact of Computer Use on Children's Neurological Development

In recent years, the society has been inundated with rapid technological developments particularly when it comes to computers. Sociologists have noted the impact that the increase in computer use could have (and to some degree already has had) on the society as they begin to replace human contact[16]. Between 1996 and 1999 alone, the number of homes with internet access doubled[17]. On a neurological level, this is concerning because increased computer use may develop habits that strengthen certain areas of the brain and as a result do not allow others to strengthen to their full potential. This is especially concerning when it comes to children because

their brains continue to develop through adolescence. In 1999, children were spending an average of 24 minutes more with the computer per day than just one year before[17].

Attention is developed over the course of many years and occurs in three stages. In order for this to happen it is necessary for the brain to practice activities that hone attention skills. Computers often conflict with these activities that are needed for one to develop the ability to pay attention. The *first stage* occurs until age seven[16]. During this period, children learn how to be selectively attentive. Too much sensory input during this stage can cause children to either tune out this input when it is not necessary to do so or to become "jumpy" and over-stimulated by input that does not warrant that kind of response[16]. Computers present a danger during this stage of development because they stimulate multiple senses simultaneously. If exposed to computers too much, children do not have the opportunity to develop the ability to pay attention to one activity. The *second stage* occurs in later childhood typically between ages seven and nine. This stage is particularly critical because it is when "response organization" is developed. Response organization is the ability to "form a plan and act on it in an organized, efficient manner[16]." Most computer programs do not allow for children to do this. Rather than requiring that they determine the appropriate sequence of steps that must be taken in order to reach a particular goal, the computer has these steps mapped out. Some computer programs provide more opportunities for this development, but the majority does not[16]. The *last stage* of attention development is sustained attention, or the ability to stay focused for a period of time and occurs from age eleven on. This stage is important for teenagers as they continue to groom their ability to focus for long periods of time[16, 18].

Again, too much time spent on the computer results infringes on the brain's chance to gain this crucial skill. Some argue that computers have merely prompted humans to develop a different kind of focus that emphasizes the ability to multitask rather than just focus on one activity[19]. But how much multitasking is too much? There are still situations where people are required to focus for long periods of time on things that are not necessarily of interest to them. Neurologists and psychologists have emphasized the importance of the developmental milestones when it comes to attention[16].

Another important impact that computers have the brain is on chemical responses to emotions. Computer games or even subliminal images cause neurological reactions in humans. There are physical responses to fear, anxiety, or excitement that all humans experience and are unable to control[20]. Hormones or chemicals such as adrenaline cause increased heart rate and muscle changes for the fight or flight response. These responses can become an ingrained physical habit if one is repeatedly exposed to computer games--even educational games. "The full effects of such "downshifting" to primitive fight or flight responses are unknown, but they could habituate the brain to a need for "extreme" experience or chronically affect blood pressure"[16]. The overuse of computers during development may also cause the prefrontal cortex (which regulates emotion, complex thought, and problem solving [20]) to become idle resulting in a lazy or underdeveloped executive system[16]. Before parents and educators become too excited about children using computers, the long-lasting neurological impacts must be taken into account.

7. The Effect of Computer Screen on Vision
Viewing a computer screen is different than viewing a typewritten or printed page. Often the letters on a computer screen are not as precise or sharply defined, the level of contrast of the letters to the background is reduced and the presence of glare and reflections on the screen may make viewing more difficult[21].

Working at a computer requires that the eyes continuously focus, move back and forth, and align with what persons are seeing. You may have to look down at papers and then back up to type, and the eyes have to accommodate to changing images on the screen in order to create a clear picture for the brain to interpret.

All of these functions require a lot of effort from eye muscles. Working on a computer is more challenging to the eyes than reading a book or piece of paper, because a computer screen also adds the elements of screen contrast, flicker, and glare. Computer eye problems are more likely to occur if a person already has an eye problem -- such as nearsightedness or astigmatism -- or if a person need glasses but don't wear them or wear the wrong prescription for computer use.

Working at a computer gets even more difficult as human get older. That's because the lens of your eye becomes less flexible. The ability to focus on near and far objects starts to diminish after about age 40 -- a condition called presbyopia[21].

8. The Negative Impact of the Computer Generated Psychology[23]:

8.1 Anti Social

Despite increasing knowledge of social and biological risk factors for antisocial and violent behavior, we know surprisingly little about how these two sets of risk factors interact anti-social attitudes and behavior are formed from exposure to program content of the media features that were created from this computer. One of the many features that adorn the contents of the computer software is a game. Children, teens and adults use a computer to play their favorite game each. For instance students play sports games or war like Counter Strike (CS) which is a computer game. Usually they play their favorite game was on the sidelines of their activity when saturated or resting. Computer game provides many spices violence in it. Computer games with violent content have the same level of exposure such as exposure to violence in television channel. Even a study shows that video games (video games) have a greater ability to make children become less sensitive to violence than any television or life experiences that intersect with violence.

8.2 Computer Anxiety (anxiety, fear of computers)

Fear of the computer is struck almost a third of the population of adult computer users. Some consequences of the most scary case against the computer are perceived nausea, vertigo, and broke into a sweat. The cause of their fear there are many things and one of them because of fears they will get a disaster by pressing the wrong key. In this case their fears associated with the level of privacy that can be penetrated because of their mistakes such as pressing the button image in internet spam. Other causes are feeling out of control felt by the people has no access to non-technical or technical skills on the computer when faced with complex technical systems and make it difficult.

8.3 Addiction to Internet

Computer addiction can also create a tendency in all people who use computers. This feeling is to encourage people to continually use the computer like a person suffering from drug addiction. Feature that offers computer and accidentally formed just as the computer becomes a drug must be taken and if not taken will generate its own pain experienced by its users. Existing sites in the internet with the services and satisfaction can meet the needs of people who wear them. Game sites, interactive communication services to make computers become commodity technology that cannot be separated from human life just as the existence of cell phones today. Pain makes people addicted to constantly use the computer experts say is an indication of the formation of media habits. And the deadly addiction can destroy human life.

9. Use of Computers During Daily Work Cause of:
9.1 Neck pain

For people who spend a great deal of time using computers, neck pain is a common problem**[24,25]**.By computer, we include desktop, laptop, notebook personal computers, video display units and terminals, to include the use of keyboards and associated pointing devices like a mouse or trackball. Neck pain is pain experienced anywhere from the base of the skull at ear level to the upper part of the back or shoulders.

The factors involved in neck pain are complicated and include physical, psychological, individual, and environmental sources**[26]**. However, office workers and computer users experience the highest incidence of neck pain of all workers with a one year prevalence of neck pain ranging from 17.7% to 63%**[27]**. Additionally, psychosomatic symptoms during adolescence can predict neck pain in adulthood, setting the stage for these future workers before they even enter the workforce. Fatigue and sleep difficulties in adolescence are associated with a high prevalence of neck pain in adulthood**[28]**. Frequent computer activities are a noted risk factor for adolescents using computers four to five hours per day**[29]**, and with children being exposed to computer related activities at earlier ages, the consequences of neck pain in the future workforce deserves more attention.

There are additional risk factors associated with neck pain. There is a clear relationship indicating workers with a prior history of neck, low back or upper extremity pain are more likely to experience neck pain**[27]**. People with the most severe neck pain also are more likely to have other problems that significantly affect their health**[30]**. The perception of neck muscle tension is an individual risk factor for neck pain and perceived muscular tension in the neck a few times a week had a higher incidence rate for neck pain, compared to those who did not perceive muscular tension**[27]**. Often involved in trapezius myalgia, the upper trapezius muscles in computer workers with neck pain had less relative rest time during psychologically stressful tasks**[31]**.

A higher risk for work related neck pain is noted in people with higher mental stress**[32,33]**, situations that demand the greatest job strain**[27,34]**, shortage of personnel in the workplace**[24]**, a lower amount of control over the job**[31]**, and low supervisory support**[27,34]**. Those with mental tiredness at the end of the day are twice as likely to experience work related neck pain**[24]**.

9.2 Radiation Monitor[35]

Eyes are organs of the body most prone to illness due to work, because too often focus on the eyeball to the screen. Display screens are too bright hot colors like red, yellow, purple; orange will be more accelerated fatigue in the eye. Apart from that, the reflection of light (glare) on the display monitor that comes from other sources such as windows, lighting, etc., will increase the burden of the eye. Workspace lighting also affects the burden of the eye. Use the monitor screen is not ergonomic can cause a complaint to the eye.

When the computer operator to use soft contact lens (lens of the eye), eye fatigue will be felt sooner, because the eyes are in a state of focus to the screen so that the ball will rarely blinks his eyes rapidly became dry and this causes friction between the lens and eyelids. Space-cooled (AC) would be more aggravating friction, because the air conditioned room air is dry so the tears would come to yawn .

9.3 Neural Disturbance[23]

High noise printer can affect the human nervous and this can result in fatigue and soreness. The noise limits are allowed to work for less than eight hours per day is 80 dB. Whereas the ideal working space is to the noise around 40-50 dB. If there is work in the space of the refrigeration (AC), then the noise will grow apart from the sound of the printer .

**9.4 Repetitive Strain Injury (RSI)[35]**

They occur from repeated physical movements which cause damage to tendons, nerves, muscles and other soft tissues. RSI is a term that refers to several variations of skeletal muscle complaints (musculoskeletal). This complaint concerns known to the muscle tendon pain. RSI covers the upper arm disorders associated with the work (the Work-Related Upper Limb Disorders) and overuse injuries associated with working (Occupational Injuries Overuse). These complaints mainly suffered by the workers with a static sitting position when using a computer or using repetitive hand movements (repetitive) every day, a static workload (such as holding a mouse), allowing the arm bands, and the like in a long time. It will get worse if the workplace is not ergonomically designed, for example the position of the keyboard and the monitor that is too high or too low, the chair does not support the body to sit upright, and so forth .

10. Questionnaire

A recent survey made by the researchers, on about 55 persons (from age 10 – 40 years old), 25 person (from age 10-19 years old) and 30 person(from age 20-40 years old), revealed that 82% used frequently the PC.

10.1 For adult:

32% of adult spent over three hours daily in front of a computer screen; 43% did not take computer breaks as often as recommended; 9% did not take break at all; 37% suffering from a headache or pain in shoulder or back pain; 34% don't doing regular eye testing, at least once every 2 years;24% use computer for playing games while 26% use computer for working; 49% did not use radiation filters and 30% did not sit properly to support the lower back; see fig(1).
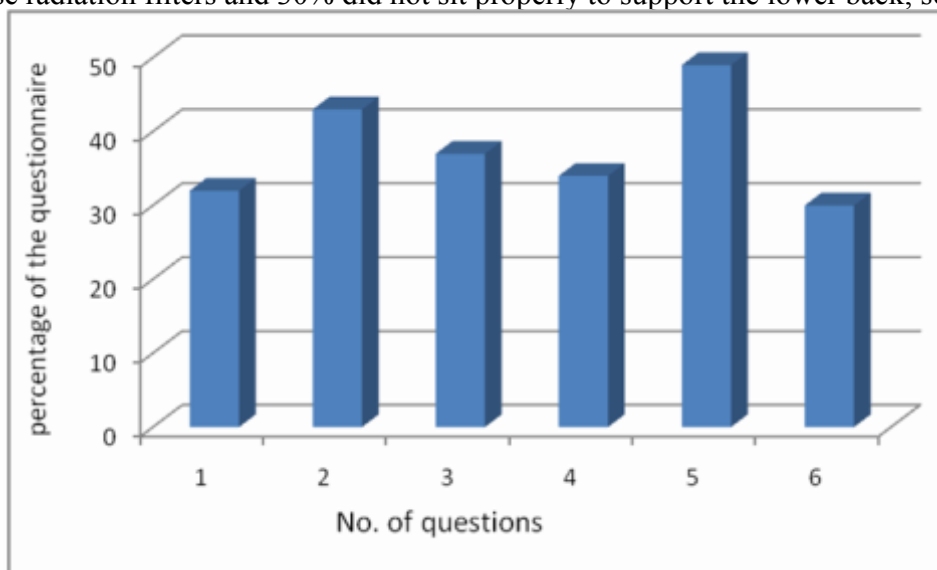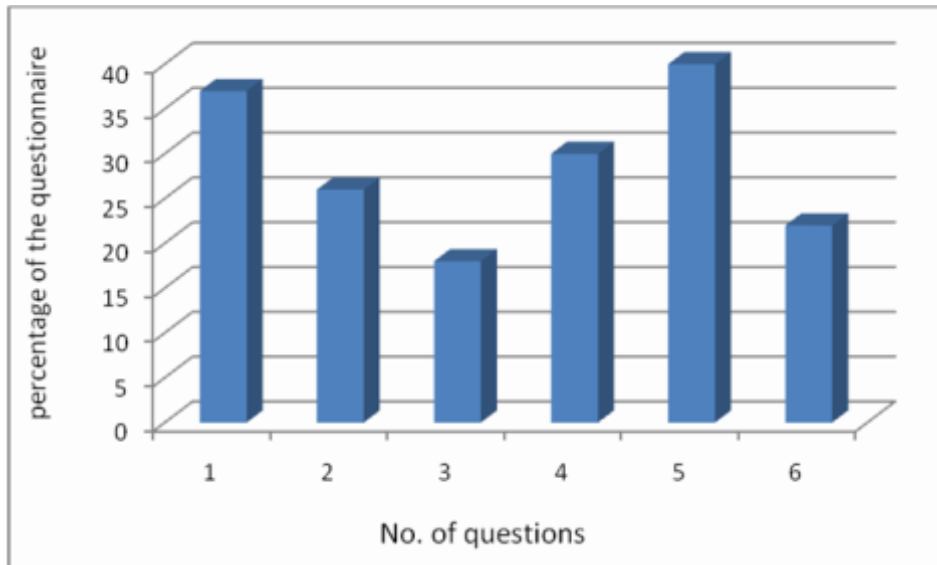

Fig(1): Result of Questionnaire on Adult Health

1. Spent over three hours daily in front of a computer screen.
2. Don't take computer breaks as often as recommended.
3. Suffering from a headache or pain in shoulder or back pain.
4. Don't doing Regular eye testing, at least once every 2 years.
5. Don't use radiation filters.
6. Don't sit properly to support the lower back.

10.2 For children:

37% of children spent over three hours daily in front of a computer screen ; 26% did not take computer breaks as often as recommended; 20 did not take break at all; 18.8% suffering from a headache or pain in shoulder or back pain; 30% don't doing Regular eye testing, at least once every 2 years for adult , 32% use computer for playing games while 11% use computer for working for children ;40% did not use radiation filters; and 22% did not sit properly to support the lower back; see fig(2).

Fig(2): Result of Questionnaire on children health

1. Spent over three hours daily in front of a computer screen.
2. Don't take computer breaks as often as recommended.
3. Suffering from a headache or pain in shoulder or back pain.
4. Don't doing Regular eye testing, at least once every 2 years.
5. Don't use radiation filters.
6. Don't sit properly to support the lower back.

Added to computer vision syndrome, PC users signaled neck and shoulder issues, especially those wearing bifocals. "That's because their bifocals are often not set for their computer so they end up having to move their head closer to the computer while tipping their head back to see the screen. That's an awkward position,".

11. Questionnaire's Result

All respondents of the children and adult, were found to manifest one or more of the following clinical presentation: mid back pain, headaches, and upper back pain, restricted movement in the shoulder and upper back, low back pain and referred pain. Research findings from the questionnaire administered and the subsequent consultations, the following trends were obtained:

a. Lack of knowledge about adapting the body to the work environment and vice versa (i.e. proper ergonomics);
b. Overworking;
c. Poor Posture.

11.1 Lack of Knowledge About Ergonomics

The research found that many assumed that they had a problem and that little could be done within their work environment or control to resolve it.

Those that were supposedly previously taught ergonomics or occupational health guidelines appear to be knowledgeable about the rules and regulations but had little or no knowledge about how their spinal muscular system related to the environment.

11.2 Overworking

The changes in the workplace and lack of job security on the past few years has required workers to work long hours, often to secure diminishing positions and with unrealistic datelines.

Many professionals working in the computing sector or with computers are consultants or contractors. These people, in the real sense of the word, work for themselves in a group or company environment where their income is directly proportional to the amount of time spent at work.

Many contractors work more than the required hours per week and a maximum ceiling of time is uncommon in the IT industry, Mining and Petroleum industry.

Most of these respondents did not take pre-required breaks and pauses during high levels of concentration, use of the mouse & keystrokes. This can easily cause muscular systems to contract, especially if the ergonomics is unsuitable and hence contribute to CTS.

11.3 Poor Posture

Respondents indicated that their spinal muscular problems were related to their posture, which was mostly in a forward trunk flexed position, which automatically causes excessive lumbar strain and in the long term, can contribute to spinal degeneration. "On the edge" posture was also common where the person is seated at the edge of the chair, with the gluteals receiving minimal support. The entire weight of the person is poised on the bony prominences of the sacrum (ischial tuberosities) which is also an ergonomic hazard. Poor postures seen in a few workstations have been due to constraints of space and lack of equipment in the workplace.

12 Points to Consider for Prevention Children Using a Computer:

There are several measures must be undertaken in order to protect children who use the computer, including

1. An eye examination.

This makes sure that the child can see clearly and comfortably. For regular computer users, at least an annual eye examination is required. When necessary, refractive correction and / or orthoptic exercises (e.g. in convergence insuffiency), should be provided.

2. Reduction of the amount of time that a child can continuously use the computer.

A ten-minute break for every hour work, will minimize the development of accommodative problems and eye irritation.

3. Carefully check the position of the computer.

The computer monitor and the keyboard are positioned and adjusted according to child's body parameters. The screen should not be positioned in a too high level in the child's field of view; the chair should not be positioned in too low level and the desk not in a too high level. An adjustable chair is a good solution. A foot stool may be necessary to support the child's feet.

4. Carefully check the lighting for glare on the computer screen.

Windows or other light sources could create glare on the screen. When this occurs, the desk or the computer screen should be turned to another direction.

12.2 Protective Measures for Adult:

"First, get your eyes checked regularly and work with your doctor of optometry to solve these problems. The doctor who knows you are using a computer for an extended period of time will do things differently for you then they might otherwise do. Special computer glasses and computer screen filters are available to help reduce glare and eye discomfort," don't forget to blink" , remember to blink when using a computer. When we concentrate, our blink rate goes

down, leading to dry eyes. Every 20 minutes look away from your computer for about 20 seconds; this will minimize the development of eye-focusing problems and eye irritation caused by not blinking enough. "You should not see any glare or reflection at all off your computer screen. You should not have windows in your field of view, Ergonomics should not be neglected. "Be careful about the ergonomics of your computer. The screen should be right in front of you so you don't have to twist to see it and the monitor should be right about eye level or a little below eye   level.
Safety measures for people using computers on a daily basis or prolonged period:

1. Use Anti-glare screen with computer monitor to overcome eye pain or strains and other related issues.
2. Use Anti-glare goggles or lenses in case of public computers or office computer where such a facility is not available.
3. Try to restrict the work with regular breaks or intervals.
4. Soak the eyes with a clean wet cloth when you feel pain or heaviness in the eyes.
5. Practice various exercise and yoga tips as and when possible to relax the eye and body.
6. Check the doctor every 3 months and have a proper analysis of the health status.
7. Sleep for at least 7 hours to remain fit and active.
8. Sit in a comfortable position while using the computer.

13. Conclusion and future work

While it is known that computer users have WRNP, the cause is still an enigma. Future clinical research in this area should be prospective in design, evaluate effectiveness, efficacy, and cost effectiveness of primary preventive strategies for WRNP, and further explore the potential adverse effects of engaging in prolonged exposure to computer work at a young age.

Future research should include identifying causes of work related neck pain so that appropriate primary prevention strategies may be developed and to make policy recommendations pertaining to prevention. Radiation filters are available for all types of computer monitors, and they work well   to   protect   you   from   radiation. It is also helpful to move the processor tower as far away from your body as possible. This will reduce   radiation   that   could   reach   and   affect   your   body.

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