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RESEARCH ARTICLE

HEALTH PROBLEMS AMONG FEMALE DESKTOP COMPUTER USERS

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ABSTRACT

The present investigation entitled "A study on Health problems among female desktop computer users" was conducted with an aim to assess problems faced by female computer users in Ludhiana. The parameters included were physical characteristics of selected respondents and health problems encountered by them due to work stress. Ergonomic Stress Index worksheet was administered to the respondents in order to recognize the common pain symptoms experienced by the desktop computer users at workplace. Result revealed that majority of the respondents faced headache (61.25%), tiredness (61.25%) and 17 % of the respondents faced the problem of low motivation due work stress. As per Ergonomic Stress Index, the respondents felt moderate to mild pain in head, low back, neck, shoulder and dryness in eyes. So it can be concluded that prolonged hours of sitting in front computer leads to musculoskeletal problems.

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INTRODUCTION

In India, the health problems are slowly taking roots, especially among the computer users working for more than five hours a day. Working on computer for prolonged periods brings about biomechanical forces (physical load) that can generate the development of musculoskeletal disorders over time. The term MSDs refer to the conditions that involve the tendons, muscle, nerves and even supporting structure of the body. Computer users mostly work in a sitting posture (static). A prolonged sitting posture could initiate continuous static contraction of the neck muscles, which may result in muscle overload, resulting in neck pain, upper limb disorders and back pain (Wahlstrom, 2005). Repetitive hand and wrist movements, stereotyped movements of the arms, hands and fingers with short cycles, may determine increased rates of pain and MSDs. Repetitive loading cycles at high rates of maximum voluntary contraction lead to rapid onset of fatigue. Screen can be a source of risk factor when it is placed too high/low/laterally in relation to operator, displayed elements are difficult to read (fonts too small, low contrast.), the display allows reflections, the operator will try to turn his/her body to find a position where he/she does not see reflections, which can lead to a poor working posture.

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The work time determines the cumulative biomechanical load and the degree of fatigue. It can be short and intense, leading to acute disorders or prolonged with low/moderate intensities, leading to chronic or degenerative disorders. The level of discomfort appears to increase with the amount of computer use. Computers are tremendously used by the faculty, office staff and students at Punjab Agricutural University, Ludhiana. So, it is considered to be one of most eligible areas to conduct a study regarding prolonged computer use and health related problems. The study was, therefore, planned with following specific objectives:

- To study physical characteristics of selected respondents and health problems encountered by them due to work stress.
- To assess the problems among computer users using Ergonomic Stress Index.

Research method

The data was collected from 80 female office employees of different departments of Punjab Agricultural University, Ludhiana. Using personal contact method and self-observation technique. The female office employees in the age group of 30-50 years who have been working on computer for 4-6 hours daily and at least for the last three years were purposively selected. Health profile of the selected respondents and Ergonomic Stress Index the scale was used on 80 respondents and they were asked about the intensity of pain felt by them on

a five point scale where zero depicts no pain and five depicting very severe pain was studied using record sheets.

RESULTS AND DISCUSSION

Physical characteristics of the selected respondents

Height: Table 1 reveals that majority of the respondents (52.50%) were in the height category of 150 -160 cm. Forty per cent respondents fall in the height category of 160-170 cm. However, only 7.50 per cent of respondents were between 170-180cm of height category.

Weight: It was further observed that 37.00 per cent of respondents had weight between 60-70kg. Thirty five per cent respondents weigh between 50-60kg and 18.75 per cent of respondents weigh between 70-80kg. Only 8.75 per cent of respondents had weight between 40-50kg.

Body Mass Index: Body mass Index was calculated by using values of height and weight of the respondents. Table 1enfolds that 57.50 per cent of respondents falls in the category of obesity I Eleven per cent of respondents were found to be at the risk of obesity, only 17.50 per cent of respondents falls under normal BMI category, whereas 13.75 per cent were also found to be underweight.

Use of spectacles: Sitting in front of the computer for long time affects the vision of the computer users. Keeping this in mind the respondents were asked if they were using spectacles or not. Forty per cent respondents use spectacles and 60 per cent respondents were not using spectacles.

The data in table 2 reveals that regarding physiological problems from work stress 61.25 per cent of the respondents felt headache out of which 22.50 per cent reported that they felt continuous headache sometimes due to working on computer. Thirty eight per cent reported that they felt temporary headache due to work stress. Nearly half of the respondents felt strain on eyes (46.25%), out of which 11.25 per cent stated that the effects stayed for long time i.e. they felt dryness in eyes, irritation persists in the eyes, they also felt sensation of burning and the eyes got strained. One third of the respondents (35%) felt temporary problem in eyes due to work stress. The eyes got strained and they face the problem of blurred vision. But after taking some break and closing the eyes for sometimes the problem diminishes.

Low back pain (42.50%) and body ache (43.75%) was reported by the respondents due to computer work. Thirty one per cent respondents also reported rise in blood pressure. Das and Ghosh (2010) reported that computer users face many problems while working on computer like eyestrain, burning eyes and headache. Survey on computer users showed that vision discomfort was most frequent among computer users. Regarding symptomatic problems, 61.25 per cent of the respondents felt tiredness, 26.25 per cent of respondents felt tightness in muscles, 23.75 per cent of respondents had stiffness in joints whereas 17.50 per cent of respondents felt difficulty in standing, bending, lifting or other movements. Numbness in arms and hands was also felt by almost 19 per cent of respondents. This may be due to the static posture adopted by respondents for long hours of computer use. Moreover, when the posture of the worker is not correct the body gets fatigued easily lead to muscular discomfort.

Table 1. Physical characteristics of selected respondents

n=80

	Category	Number	Percentage
Height (cm)	150-160	42	52.50
	160-170	32	40.00
	170-180	6	7.50
Weight (kg)	40-50	7	8.75
	50-60	28	35.00
	60-70	30	37.5
	70-80	15	18.75
Body mass index (kg/m^2)	Up to 19 (underweight)	11	13.75
	19-22.9 (Normal)	14	17.50
	23-24.9 (at risk of obesity)	9	11.25
	25-29.9 (obesity I)	46	57.50
	>30 (obesity II)	0	0.00
Users of spectacles	Yes	32	40.00

Health problems faced by respondents to work stress

Physiological, symptomatic and psychological health problems

Table 2 reveals the health problems faced by the selected respondents from the work stress. The health problems were divided into three categories i.e. Physiological, Symptomatic and Psychological problems. Further, they were also asked that whether the problems were temporary or continuous. Temporary problems were diminished after taking some rest or medicines but continuous problems have long term effect on their body.

Regarding psychological problems, 17.00 per cent of the respondents felt low motivation, 16.25 per cent of respondents felt low self -confidence and 12.50 per cent of respondents felt depression because respondents were not getting salary at proper time and moreover pain faced by them in body parts made them depressed. Pain can cause lack of sleep and with lack of sleep respondents felt depressed. Eleven per cent of respondents felt negativity and got irritated from work due to computer overuse or overload of the work. Similar findings are reported by Wang *et al* (1998) who stated that if computer was used for more than 30 hours per week and more than 10 years, depression and somatic disorders increase.

On the whole, it can be concluded that temporary problems were high as compared to continuous problems whether they are physiological, symptomatic or psychological problem. Continuous problems did not diminish; they remain for long time. Carter and Banister (2007) discussed the possible cause of musculoskeletal pain in VDT workers and outlines strategies to minimize it also such as worker selection, training, postures, conditions, and rest breaks. Short term musculoskeletal discomfort is experienced by many VDT operators in the telecommunication industry and chronic disability may result in the long term affects. It is important for the ergonomists and office managers together to improve the working conditions in this important occupational area.

Very severe pain was observed in upper back, lower back, eyes and buttocks. According to Vardhan *et al (*2005) students of an educational institution working on computer generally suffered from wrist pain and back pain. Pain in neck and shoulders felt by respondents was mild (mean score 2.33 and 1.79). When bad postures were adopted by respondents while using computer for long period it leads to stress on neck and shoulders. According to Das and Ghosh (2010) VDT workers mainly suffered pain in neck, shoulder, forearm, wrist, elbow and the different parts of the upper extremities. Problem of dryness in eyes and burning sensation in eyes was mild (mean score 1.8 and 1.6) because they continuously work on computers without relaxing their eyes.

Table 2. Physiological, symptomatic and psychological health problems faced by respondents due to work stress

n=80

Problems	Temporary problems	Continuous problems	Total
Physiological			
Cough, cold, fever	5 (6.25)	0 (0.00)	5 (6.25)
Head ache	31 (38.78)	18 (22.50)	49 (61.25)
Body ache	33 (41.25)	1 (1.25)	34 (42.50)
Low backpain	27 (33.75)	8 (10.00)	35 (43.75)
Strain on eyes	28 (35.00)	9 (11.25)	37 (46.25)
Rise in blood pressure	9 (11.25)	16 (20.00)	25 (31.25)
Symptomatic			
Muscle tightness	19 (23.75)	2 (2.50)	21 (26.25)
Joint stiffness	12 (15.00)	7 (8.75)	19 (23.75)
Tiredness	39 (48.75)	10 (12.50)	49 (61.25)
Numbness of arms/hands	14 (17.50)	1 (1.25)	15 (18.75)
Difficulty in standing, bending, lifting or other movements	11 (13.75)	3 (3.75)	14 (17.50)
Psychological			
Depression	7 (8.75)	3 (3.75)	10 (12.50)
Low self-confidence	7 (8.75)	6 (7.50)	13 (16.25)
Low motivation	12 (15.00)	2 (2.50)	14 (17.00)
Increased negativity and irritation	7 (8.75)	2 (2.50)	9 (11.25)

*multiple response
Figure in parentheses denotes percentage

Ergonomic Stress Index

Ergonomic Stress Index worksheet was administered to the respondents in order to recognize the common pain symptoms experienced by the desktop computer users at workplace. Table 3 depicts that mean scores were given by the respondents to various statements according to the problems faced by the respondents using computers. According to the mean scores, ranks were given in this table. The table reveals that problem of headache while working at the VDT was moderate (mean score 2.73) and rank I was given. Problem of low back pain felt by respondents was mild (mean score 2.4). Backache problem was faced by computer users because they work for long hours without taking breaks. Shraddha and Sehgal (2002) studied about biomechanical characteristics of computer users and found that a remarkable change in angle of deviation occurred for both cervical and thoracic region of the respondents.

Pain in mid back felt by respondents was very mild (mean score 1.46). While using computer respondents felt almost negligible pain in upper back, upper arm, wrist, forearm and fingers of dominant hand and according to respondents no complaints regarding nature of work and indoor climate where they work because they feel comfortable in that environment.

Overall, it can be concluded that headache problem was moderate while working on computers and pain in low back, neck, shoulders, mid back was mild, dryness in eyes and burning sensation was also felt though mild problem were there. We can say that these problems were common in computer users, these problems can be diminished with some treatment or medicines. But some problems remain for life long. On the basis of 5 point scale from unbearable severe (5) to no pain (0)

Table 3. Problems faced by the respondents using desktop computers according to Ergonomic Stress Index

n=80

Symptom	Mean score	Intensity of pain	Mean Rank
Headache while working at the VDT	2.73	Moderate	I
Pain in low back	2.4	Mild	II
Pain in neck	2.33	Mild	III
Dryness in eyes	1.8	Mild	IV
Pain in shoulders	1.79	Mild	V
Burning sensation in eyes	1.6	Mild	VI
Pain in mid back	1.46	Very mild	VII
Blurry distant vision when looking off the video display terminal.	0.88	Very mild	VIII
Pain in buttocks	0.81	Very mild	IX
Sore eyes	0.6	Very mild	X
Stain in elbow	0.45	No pain	XI
Tingling in thumb	0.32	No pain	XII
Pain in wrist	0.25	No pain	XIII
Pain in upper back	0.19	No pain	XV
Pain in upper arm	0.13	No pain	XVI
Tingling in fingers	0.12	No pain	XVII
Lack of concentration in work	0.11	No pain	XVIII
Pain in forearm	0.1	No pain	XIX
Pain in fingers of the dominant hand	0.075	No pain	XX
Complaints regarding nature of work	0.06	No pain	XXI
Complaints regarding indoor climate	0.06	No pain	XXI

*Multiple responses

Conclusion

So, overall it can be concluded that respondents faced the problems in different body parts like head, neck, knee, eye irritation and burning sensation was felt by respondents though mild problems were there. But these problems can be diminished with some treatment or medicine.

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