ORIGINAL ARTICLE

PREVALENCE OF DEPRESSION BY ZUNG SELF-RATING DEPRESSION SCALE AMONG COMPUTER ENGINEERING STUDENTS AND TEACHING STAFF OF GULBARGA CITY

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ABSTRACT: INTRODUCTION: The occupational hazards of computer use are much more serious and disabling than any other occupation. Health problems in computer users appear to be interrelated and they are musculoskeletal, visual, stress and depression related.¹ OBJECTIVES: 1) To find the prevalence of depression among computer engineering students and teaching staff in Gulbarga city. 2) To suggest remedial measures for prevention of depression among study subjects. METHODS: A cross sectional study was conducted among all 319 third year computer engineering students and 79 teaching staff in all 4 Engineering colleges of Gulbarga city for 1year from January 2011 to December 2011. The study subjects were interviewed using pre-designed and pretested proforma including Zung Self-Rating Depression Scale. RESULTS: In our study majority (75.37%) of study subjects belonged to 20-22 years age studying B.E Computer science and 274(68.84%) were females and 124(31.15%) were males. Amongst study subjects mild depression were more common who works on computer for 6-9hr for more than 9years 7(1.75%). CONCLUSION: In our study mild depression is more common in students working on computer for 6-9hr for more than 9years which accumulate over a period of time resulting in severe depression affecting physical and mental health. KEYWORDS: depression, computer related health problems, Zung Self-Rating Depression Scale, engineering students.

INTRODUCTION: Almost every country in the world uses upgraded technology and has improved its standard of living due to the invention of the computer. Modern day computers have eased our life in many ways. Private bodies, autonomous institutions and almost every organization are being computerized for smooth and faster flow of data and information. Computer work has generated a new genre of occupational health problems. Computer-induced medical problems can be described as an umbrella term for the various problems a computer user can develop from prolonged and incorrect computer use. Computer use causes wide range of symptoms including headache, eyestrain, musculoskeletal problems, stress and depression etc.² Depression, is an important psychologic disorder which is extremely prevalent and most common cause of disability. The educational process itself is influenced by student state of physical and mental well-being.³ If not diagnosed early can lead to severe depression impairing the physical and mental health.

Since computer science students are future engineers working in IT industry, it is important to determine the prevalence of depression to prevent it from assuming epidemic
proportions. Hence a need was felt to carry out the present study to assess the depression by Zung Self-Rating Depression Scale among computer science students and staff.

OBJECTIVES:
1. To find the prevalence of depression among computer engineering students and teaching staff in Gulbarga city.
2. To suggest remedial measures for prevention of depression among study subjects.

METHODOLOGY: A cross sectional study was conducted among computer engineering students and teaching staff in all 4 Engineering colleges of Gulbarga city for 1 year from January 2011 to December 2011.

INCLUSION CRITERIA: Students and teaching staff working on computers for minimum of 3 hours continuously per day for 3 times in a week for 6 months are included in the study. After consulting with the head of department of computer science department of Engineering colleges; teaching staff and third year computer engineering students are included in the study.

EXCLUSION CRITERIA:
1. Computer engineering students belonging to first, second and final year.
2. Students belonging to other departments of engineering colleges.

Sample Size: In Gulbarga city, there are four engineering colleges. All the third year (319) students and 79 teaching staff of computer science department belonging to these four engineering colleges are included in the study.

Study Tool: The study subjects were interviewed using pre-designed and pretested proforma including Zung Self-Rating Depression Scale, which is 20-item self-report questionnaire that is widely used as a screening tool covering affective, psychological and somatic symptoms associated with depression. Each item is scored on a Likert scale ranging from 1 to 4. A total score is derived by summing the individual item scores, and ranges from 20 to 80. The scores fall into four ranges:

- 20-49 Normal Range.
- 50-69 Mildly Depressed.
- 70-80 Moderate to Severely Depressed.

Data was analyzed by using proportions and chi square test. The statistical software SPSS 12 is used for the analysis of the data and Microsoft word and Microsoft Excel have been used to generate graph, tables etc.

RESULTS AND DISCUSSION: Socio-demographic factors.
In our study majority (75.37%) of study subjects belonged to 20-22 years age studying B.E Computer science and 274(68.84%) were females and 124(31.15%) were males (Table 1)
and in study done by Eric B. Schlossberg et al\(^7\) (2004) in 206 Electrical Engineering and computer science graduate students of the University of California at Berkeley in whom majority (85%) belongs to 21-25yr age group and (85%) were males and study done by Sen A and Stanley Richardson\(^8\) (2007) in Malaysia among 136 under graduate students (studying computing or medicine) revealed that 71% of the respondents were less than 30 years old and 65% of them were females.

The study revealed that 319(80.15%) of the study subjects were studying B.E, followed by 41(10.3%) graduates, 35(8.7%) postgraduates and 3(0.75%) doctorate, (Table 1). This study was done among students and teaching staff in contrast to study done by Husnun Amalia et al\(^9\) in 2010 among 99(100%) are computer science students of university of Indonesia and Cammie Chaumont Menéndez et al\(^10\) in their study done in 2009 in USA revealed that 160(100%) are engineering graduate students.

**Duration of Using Computers:** The present study reported that majority of the study subjects 164(41.2%) used computers for 3-6 hour followed by 117(29.4%) less than 3hour, 75(18.84%) for 6-9 hour and 42(10.55%) for more than 9 hr (Table-2). Since in this study the study subjects have got practical classes for 3hr in a day hence majority (41.2%) of them work on computers for 3-6hr.

Richa Talwar et al\(^4\) (2009) in their study on computer professionals in Delhi reported that 88(44%) individuals worked in front of computers for 6-9hours followed by 60(30%) for 3-6hours and 52(26%) for more than 9hours per day.

A study done by Che-hsu (Joe) Chang PT et al\(^11\) (2007) in USA among undergraduate students, reported that daily computer usage longer than 3 hr was significantly associated with an odds ratio 1.50 (1.01–2.25) of reporting symptoms.

A K Sharma et al\(^12\) (2006) in their study on IT professionals with varied job profiles in New Delhi revealed that average working hours per day on computer in call center and software development were higher i.e. 9±0.67 hours and 8.3±0.81 hours respectively as compared to 5±0.41 hours in data entry/ processing group.

Our study subjects were third year computer science students and teaching staff therefore majority (48.99%) have 3-6yr computer exposure followed by 101(25.37%) less than 3yr, 56(14.1%) for more than 9yr and 46(11.6%) for 6-9yr (Table-3) which is similar to study done by A K Sharma et al\(^12\) (2006) on IT professionals with varied job profiles in New Delhi where in majority 72(36%) worked on computers for 3-6years followed by 35(17.5%) for 6-9yers, 31(15.5%) for <3years, 28(14%) for 12-15years, 27 (13.5%) for 9-12 years and 7(3.5%) for >15years.

**Study Subjects According to Zung's Self-rating Depression Scale:** The present study shows that 382(95.97%) of the study subjects have no depression (Male-95.96%, Female-95.98%) with score less than 50, 16(4.02%) had mild depression (Male-4.03%, Female-4.01%) with score 50-69 and none had severe depression (Table-4) in contrast to Study done by A K Sharma et al\(^12\) (2006) on IT professionals with varied job profiles in New Delhi reported that depression was present in 8% by Zung’s self-rating scale.
Association between Zungs Self rating depression scale and duration of work on computers.

The present study shows that mild depression were more common among study subjects, who work daily on computers for 6-9hr 9(2.26%), followed by 3-6hr 6(1.26%), more than 9hr 1 (0.25%) and absent among those who work less than 3hr on computer (Table-5).

Amongst study subjects mild depression were more common who works on computer for 6-9hr for more than 9years 7(1.75%), followed by 3(0.75%) working for 3-6hr for <3hr, 2(0.5%) 3-6hr and 6-9hr for 3-6yr, 1(0.25%) for 3-6hr for 6-9yr and 1(0.25%) for >9hr for >9yr.

Amongst study subjects depression were more common, who worked on computers for >9yr which was statistically significant. (χ² = 8.701, p<0.05).

CONCLUSION: In our study mild depression was more common who works on computer for 6-9hr for more than 9years. Majority of the study subjects used computers daily for 3-6 hours continuously for 3-6years causing depression which accumulate over a period of time resulting in severe depression affecting physical and mental health, it is identified and resolved sooner rather than later in an effort to reduce.

RECOMMENDATIONS:
1. Computer related health problems among students warrants a place on the Health Education agenda since students are country’s future.
2. To combat depression and stress they need to consider relaxation measures like meditation, proper rest, good sleep and timely food intake.
3. Studies to establish the cause and effect relationship between physical and mental health of the students and teaching staff working on computers need to be taken up in a large way.

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| Socio-demographic factors | MALE | FEMALE | TOTAL |
|---------------------------|------|--------|-------|
|                           | No.  | %      | No.   | %      | No.   | %      |
| Age in years              |      |        |       |        |       |        |
| 20-22                     | 89   | 71.77  | 211   | 77     | 300   | 75.37  |
| 22-23                     | 20   | 16.12  | 18    | 6.56   | 38    | 9.54   |
| ≥24                       | 15   | 12.09  | 45    | 16.42  | 60    | 15.07  |
| Total                     | 124  | 100    | 274   | 100    | 398   | 100    |
| Marital status            |      |        |       |        |       |        |
| Married                   | 15   | 12     | 30    | 11     | 45    | 11     |
| Unmarried                 | 109  | 88     | 244   | 89     | 353   | 89     |
| Total                     | 124  | 100    | 274   | 100    | 398   | 100    |
| Religion                  |      |        |       |        |       |        |
| Hindu                     | 93   | 75     | 186   | 67.9   | 279   | 70.1   |
| Muslim                    | 29   | 23.38  | 83    | 30     | 112   | 28.14  |
| Christian                 | 1    | 0.8    | 4     | 1.5    | 5     | 1.23   |
| Others                    | 1    | 0.8    | 1     | 0.4    | 2     | 0.50   |
| Total                     | 124  | 100    | 274   | 100    | 398   | 100    |
### Table 1: Distribution of study population according to socio-demographic factors

| Education       | Male | Female | Total |
|-----------------|------|--------|-------|
| Student         | 104  | 215    | 319   |
| Graduate        | 13   | 28     | 41    |
| Postgraduate    | 7    | 28     | 35    |
| Doctorate       | 0    | 3      | 3     |
| **Total**       | **124** | **274** | **398** |

| Occupation      | Male | Female | Total |
|-----------------|------|--------|-------|
| Student         | 104  | 215    | 319   |
| Staff           | 20   | 59     | 79    |
| **Total**       | **124** | **274** | **398** |

| Socio-economic status | Male | Female | Total |
|-----------------------|------|--------|-------|
| I                     | 0    | 11     | 11    |
| II                    | 23   | 66     | 89    |
| III                   | 76   | 139    | 215   |
| IV                    | 25   | 58     | 83    |
| V                     | 0    | 0      | 0     |
| **Total**             | **124** | **274** | **398** |

Table 1: Distribution of study population according to socio-demographic factors

### Table 2: Distribution of the study subjects according to the duration of working on computers in a typical day

| Duration | Male | Female | Total |
|----------|------|--------|-------|
| <3hr     | 41   | 76     | 117   |
| 3-6hr    | 48   | 116    | 164   |
| 6-9hr    | 31   | 44     | 75    |
| >9hr     | 4    | 38     | 42    |
| **Total** | **124** | **274** | **398** |

Table 2: Distribution of the study subjects according to the duration of working on computers in a typical day
### Table 3: Distribution of the study subjects according to the duration of using computers (in years)

| Duration | Male | Female | Total |
|----------|------|--------|-------|
|          | No.  | %      | No.   | %    | No.  | %    |
| <3yr     | 38   | 30.6   | 63    | 22.99| 101  | 25.37|
| 3-6yr    | 58   | 46.8   | 137   | 50.0 | 195  | 48.99|
| 6-9yr    | 10   | 8.06   | 36    | 13.1 | 46   | 11.6 |
| >9yr     | 18   | 14.5   | 38    | 13.9 | 56   | 14.1 |
| Total    | 124  | 100    | 274   | 100  | 398  | 100  |

### Table 4: Distribution of the study subjects according to the Zung's self rating depression scale

| Score | Male | Female | Total |
|-------|------|--------|-------|
|       | No.  | %      | No.   | %    | No.  | %    |
| <50   | 119  | 95.96  | 263   | 95.98| 382  | 95.97|
| 50-69 | 5    | 4.03   | 11    | 4.01 | 16   | 4.02 |
| 70-80 | 0    | 0      | 0     | 0    | 0    | 0    |
| Total | 124  | 100    | 274   | 100  | 398  | 100  |

### Table 5: Association between Zung Self rating depression scale and duration of work on computers

| Score | <3yr | 3-6yr | 6-9yr | >9yr | TOTAL |
|-------|-----|-------|-------|------|-------|
|       | <3 hr | 3-6 hr | 6-9 hr | >9 hr | <3 hr | 3-6 hr | 6-9 hr | >9 hr | <3 hr | 3-6 hr | 6-9 hr | >9 hr | <3 hr | 3-6 hr | 6-9 hr | >9 hr |
| <50   | 10.3 | 1.75  | 2.5   | 13.56| 20.35| 8.79  | 5.2    | 3.26  | 5.02  | 1.75  | 1.25  | 2.26  | 4.27  | 4.27  | 1.25  | 8.701 |
| %     | 0.75 | 0.0   | 0.25  | 0.0  | 0.0  | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50-69 | 0    | 0     | 0     | 0    | 0    | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| %     | 0    | 0     | 0     | 0    | 0    | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 70-80 | 0    | 0     | 0     | 0    | 0    | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| %     | 0    | 0     | 0     | 0    | 0    | 0     | 0      | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

χ²-Value: 4.17 3.695 1.217 8.701 17.6

P-value: P>0.05 P>0.05 P>0.05 P<0.05 P<0.001
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