Stress causes and outcomes statistical analysis

Abstract

In medical term “stress” is the change in mental and physical status of the body caused by factors including physical, mental or emotional tension. Stress can cause a lot of clinical and psychological conditions such as depression and anxiety. Stress complications are common in people experiencing very high levels of negative stress leading to weakness and overwhelming. It could be a result of continuous stress incidence due to different scenarios. “Stressed out” is a phenomenon that is highly increasing and affecting almost everyone. Stress is all over around us in every situation and every day, but the importance is how to handle the changes and not experiencing the changes as good or bad. Generally, changes in our life as we go on happen all the time and our reaction to these changes is what causes stress. Life changes such as studying a new level of education (e.g Masters), getting new job, losing a job, moving to new romantic partner, or family problems. These changes are new stressful events considered either positive and life-enhancing or negative. The degree of stress varies between high and low, people don't like to experience the extremes of stress. However, the capacity of each person to overcome the changes in feeling varies. On the other hand, some people enjoy being overwhelmed in important challenging changes and some don’t like the total absence of stress. In conclusion, people tend to reach the middle ground a balance between a lack of stress and too much stress, moreover, human by nature want to live in a calm atmosphere without experiencing high levels of stress. In this paper, we did an empirical study by collected data from health sciences post grad students who work and study using a survey that was administered by smart phone applications. The main idea is to detect the causes that lead to stress and could worsen the mental and physical activity of the body.

Literature review

Everyone has different stress triggers, work stress tops the list. According to surveys 40% of United States workers admit to experience office stress, and one -quarter say work is the biggest source of stress in their lives. Stress in everyday terms is a feeling that people have when they are overloaded and struggling to cope with demands which are related to finances, work, relationships and other situations. According to the annual stress survey conducted by the American Psychological Association (APA) average stress levels in the United States (U.S) raised from 4.9 to 5.1 on a scale from 1 to 10 in 2015 the main reasons given are employment and money.

Another study was done in accordance with international coordination of labor conditions a Japanese campaign advocating less work finally got under way recently in the form of work-reducing policies of the government to prevent occupational and stress-related diseases. However, long work hours among intermediate managers, who are key persons in most organizations in Japanese industry, are still considered to be prevalent. This study was conducted to examine the work hours of intermediate managers and clarify the effects of long work hours on the life-style, subjective stress, and subjective quality of life among them.

Questionnaires were administered concerning, life-styles, subjective stress, and subjective quality of life to 3870 heads of a division or a section and 2666 foremen in 110 firms in Japan. The prevalence of > or = 10 work hours was 69.7% for the divisional or sectional heads and 53.2% for the foremen. Long work hours had significant effects on the managers' life-style, such as sleeping pattern and regularity of daily life and meals. The divisional or sectional managers with long work hours perceived higher stress (odds ratio (OR) 2.51, 95% confidence interval (95% CI) 2.17-2.90) and lower quality of life (OR 1.17, 95% CI 1.02-1.36) than those who worked relatively short hours. The foremen with long work hours perceived higher stress (OR 2.35, 95% CI 2.01-2.75) and lower quality of life (OR 1.26, 95% CI 1.08-1.46) than those who worked relatively short hours. In conclusion, long work hours may be associated with poorer life-style, higher stress, and lower quality of life among managers at the intermediate level.

Data collection

The data was collected from health sciences department post grad students who work and study using a survey that was administered by smart phone applications. The main idea of this survey is to detect the causes that lead to stress and could worsen the mental and physical activity of the body.

a. Sample size, n= 100 students who study and work mainly filled the survey.

b. Data was entered, tabulated and analyzed using SPSS Software.

c. The questionnaire design consists of one types of questions:

d. Close ended questions in which the respondents are given list of predetermined responses from which to choose their answer.

e. The variables are designed to answer the research questions.

The variables in the data set are:

1. Stress: yes or no
2. Lack time to exercise: yes or no
3. Lack time to socialize: yes or no
4. Overworking: yes or no
5. Unmotivated: yes or no
6. Overeating: yes or no
7. Loss of self-control: yes or no
8. Comforts you when you are stressed smoking or Eating or Listening to music or Exercise or Going out with friends
9. Solution for work overload related stress: leave the work or Manage your time or Decrease working hours or Go for a holiday

Descriptive statistics

Stress: 56% of the subjects were stressed while 44% were not stressed (Table 1) (Figure 1).

Table 1 Stress

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Yes       | 56      | 56            | 0                  | 56                 |
| No        | 44      | 44            | 44                 | 100                |
| Total     | 100     | 100           | 100                | 100                |

Figure 1 Stress.

Lack time to exercise: 61% of the subjects lack time to exercise while 39% have time to exercise (Table 2) (Figure 2).

Table 2 Exercise time

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Valid     | Yes     | 61            | 61                 | 61                 |
| No        | 39      | 39            | 39                 | 100                |
| Total     | 100     | 100           | 100                | 100                |

Figure 2 Exercise time.

Socializing time: 55% of the subjects lack time to socialize while 45% have time to socialize (Table 3) (Figure 3).

Table 3 Socialize

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Valid     | Yes     | 55            | 55                 | 55                 |
| No        | 45      | 45            | 45                 | 100                |
| Total     | 100     | 100           | 100                | 100                |

Figure 3 Socialize.

Sleeping disturbance: 55% of the subjects suffer from sleeping disturbance while 45% sleep normally (Table 4) (Figure 4).

Table 4 Sleep

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Valid     | Yes     | 55            | 55                 | 55                 |
| No        | 45      | 45            | 45                 | 100                |
| Total     | 100     | 100           | 100                | 100                |

Figure 4 Sleep.

Unmotivated: 53% of the subjects are unmotivated while 47% feel normal (Table 5) (Figure 5).

Table 5 Unmotivated

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Valid     | Yes     | 53            | 53                 | 53                 |
| No        | 47      | 47            | 47                 | 100                |
| Total     | 100     | 100           | 100                | 100                |

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Stress causes and outcomes statistical analysis

Work overload: 71% of the subjects suffer from work overload while 29% do not suffer (Table 6) (Figure 6).

Table 6 Work overload

|   | Frequency | Percent | Valid percent | Cumulative percent |
|---|-----------|---------|---------------|--------------------|
| Valid | Yes | 71 | 71 | 71 |
|    | No | 29 | 29 | 100 |
| Total |    | 100 | 100 | 100 |

Figure 6 Work overload.

Overeat: 53% suffer from overeating while 73% have normal eating habits (Table 7) (Figure 7).

Table 7 Overeating

|   | Frequency | Percent | Valid percent | Cumulative percent |
|---|-----------|---------|---------------|--------------------|
| Valid | Yes | 53 | 53 | 53 |
|    | No | 47 | 47 | 100 |
| Total |    | 100 | 100 | 100 |

Figure 7 Overeating.

Self-control: 40% of the subjects have loss of self-control while 60% are normal (Table 8) (Figure 8).

Table 8 Self-control

|   | Frequency | Percent | Valid percent | Cumulative percent |
|---|-----------|---------|---------------|--------------------|
| Valid | Yes | 36 | 36 | 67 |
|    | No | 18 | 18 | 85 |
| Total |    | 54 | 54 | 100 |

Figure 8 Self-control.

Comfort when stressed: Here we can assume that listening to music is the most used way to reduce stress (Table 9) (Figure 9).

Table 9 Comfort

|   | Frequency | Percent | Valid percent | Cumulative percent |
|---|-----------|---------|---------------|--------------------|
| Valid | Smoking | 15 | 15 | 15 |
|    | Eating | 16 | 16 | 31 |
|    | Listening to music | 18 | 18 | 67 |
|    | Exercise | 18 | 18 | 85 |
|    | Going out with friends | 15 | 15 | 100 |
| Total |    | 100 | 100 | 100 |

Figure 9 Comfort.

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Figure 9 Comfort.

Management of stress due to work overload: Here we can see that people preferred lowering working hour as an effective way to reduce work related stress (Table 10) (Figure 10).

Table 10 Manage

| Frequency | Percent | Valid percent | Cumulative percent |
|-----------|---------|---------------|--------------------|
| Leave your work | 19 | 19 | 19 | 19 |
| Mange your time | 20 | 20 | 20 | 39 |
| Lower work hours | 43 | 43 | 43 | 82 |
| Go for a holiday | 18 | 18 | 18 | 100 |
| Total | 100 | 100 | 100 |

Figure 10 Manage.

Inferential statistics

Research questions

Does lacking time to exercise cause stress?

H0= lacking time to exercise does not cause stress.

Ha= lacking time to exercise causes stress (Table 11).

According to the chi square test the p value=0.00 and when the p value is lower than 0.05 it’s considered significant. Therefore we accept the Ha and we reject the H0. So we can conclude that sleeping disturbance causes stress.

Does sleep disturbance cause stress?

H0= sleep disturbance does not cause stress.

Ha= sleep disturbance causes stress (Table 12).

According to the chi square test the p value=0.044 and when the p value is lower than 0.05 it’s considered significant. Therefore we accept the Ha and we reject the H0. So we can conclude that sleeping disturbance causes stress.

Table 11 Stress* exercise time Cross tabulation

| Exercise time | Count |          |          |
|---------------|-------|----------|----------|
| Yes           | Yes   | 44       | 12       | 56       |
| No            | Yes   | 17       | 27       | 44       |
| Total         |       | 61       | 39       | 100      |

Chi-Square tests

| Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 16.518 | 1 | 0 | |
| Continuity Correctionb | 14.882 | 1 | 0 | |
| Likelihood Ratio | 16.852 | 1 | 0 | |
| Fisher’s Exact Test | 0 | 0 | 0 | |
| Linear-by-Linear Association | 16.353 | 1 | 0 | |
| N of Valid Cases | 100 | | | |

Table 12 Stress* Sleep Cross tabulation

| Sleep | Count |          |          |
|-------|-------|----------|----------|
| Yes   | Yes   | 36       | 20       | 56       |
| No    | Yes   | 19       | 25       | 44       |
| Total |       | 55       | 45       | 100      |

Chi-Square tests

| Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 4.434 | 1 | 0.035 | |
| Continuity Correctionb | 3.622 | 1 | 0.057 | |
| Likelihood Ratio | 4.455 | 1 | 0.035 | |
| Fisher’s Exact Test | 0.044 | 0.028 | 0.028 | |
| Linear-by-Linear Association | 4.39 | 1 | 0.036 | |
| N of Valid Cases | 100 | | | |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.16.
b. Computed only for a 2x2 table.
Does lacking time to socialize causes stress?

H₀: lacking time to socialize does not cause stress.

H₁: lacking time to socialize causes stress (Table 13).

**Table 13 Stress* socialize Cross tabulation**

| Socialize | Yes | No | Total |
|-----------|-----|----|-------|
| Stress    | 41  | 15 | 56    |
| No        | 14  | 30 | 44    |
| Total     | 55  | 45 | 100   |

**Chi-Square tests**

|               | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 17.060a | 1 | 0.000                 |                      |                      |
| Continuity Correctionb | 15.429 | 1 | 0.000                 |                      |                      |
| Likelihood Ratio | 17.5   | 1 | 0.000                 |                      |                      |
| Fisher’s Exact Test | 0      | 0 | 0.000                 |                      |                      |
| Linear-by-Linear Association | 16.89  | 1 | 0.000                 |                      |                      |

According to the chi square test the p value=0.00 and when the p value is lower than 0.05 it’s considered significant. Therefore we accept the H₁ and we reject the H₀.

So we can conclude that lacking time to socialize causes stress.

Is being unmotivated causes stress?

H₀: un-motivation does not cause stress.

H₁: un-motivation causes stress (Table 14).

**Table 14 Stress* unmotivated**

| Unmotivated | Yes | No | Total |
|-------------|-----|----|-------|
| Stress      | 34  | 22 | 56    |
| No          | 19  | 25 | 44    |
| Total       | 53  | 47 | 100   |

Chi-Square tests

|               | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | .114b | 1 | 0.736                 |                      |                      |
| Continuity Correctionb | 0.013 | 1 | 0.908                 |                      |                      |
| Likelihood Ratio | 0.114b | 1 | 0.735                 |                      |                      |
| Fisher’s Exact Test | 0.826  | 1 | 0.456                 |                      |                      |
| Linear-by-Linear Association | 0.113  | 1 | 0.737                 |                      |                      |

According to the chi square test the p value=0.00 and when the p value is lower than 0.05 it’s considered significant. Therefore we accept the H₁ and we reject the H₀.

So we can conclude that being unmotivated does not cause stress.

Does work overload causes stress?

H₀: work overload does not cause stress.

H₁: work overload causes stress (Table 15).

**Table 15 Stress* work overload Cross tabulation**

| Work overload | Yes | No | Total |
|---------------|-----|----|-------|
| Stress        | 39  | 17 | 56    |
| No            | 32  | 12 | 44    |
| Total         | 71  | 29 | 100   |

Chi-Square tests

|               | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | .114b | 1 | 0.736                 |                      |                      |
| Continuity Correctionb | 0.013 | 1 | 0.908                 |                      |                      |
| Likelihood Ratio | 0.114b | 1 | 0.735                 |                      |                      |
| Fisher’s Exact Test | 0.826  | 1 | 0.456                 |                      |                      |
| Linear-by-Linear Association | 0.113  | 1 | 0.737                 |                      |                      |

According to the chi square test the p value=0.00 and when the p value is lower than 0.05 it’s considered significant. Therefore we accept the H₁ and we reject the H₀.

So we can conclude that being unmotivated does not cause stress.
According to the chi square test the p value=0.826 and when the
p value is higher than 0.05 it’s considered not significant. Therefore
we accept the H0 and we reject the Ha. So we can conclude that work
overload does not cause stress.

**Does stress result in overeating?**

H0= stress does not cause overeating.

Ha=stress causes overeating (Table 16).

**Table 16 Stress* overeating Cross tabulation**

|        | Overeating |     |      |     |     |     |
|--------|------------|-----|------|-----|-----|-----|
|        | Yes        | 32  | 24   | 56  |     |     |
|        | No         | 21  | 23   | 44  |     |     |
| Total  |            | 53  | 47   | 100 |     |     |

**Chi-Square tests**

|                  | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|------------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | .877  | 1  | 0.349                 |                       |                      |
| Continuity Correction | .54   | 1  | 0.463                 |                       |                      |
| Likelihood Ratio  | .878  | 1  | 0.349                 |                       |                      |
| Fisher’s Exact Test | .421 |    | 0.231                 |                      |                      |
| Linear-by-Linear Association | .868 | 1  | 0.351                 |                      |                      |
| N of Valid Cases  | 100   |    |                       |                      |                      |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected
count is 20.68.
b. Computed only for a 2x2 table.

According to the chi square test the p value=0.421 and when the
p value is higher than 0.05 it’s considered not significant. Therefore
we accept the H0 and we reject the Ha. So we can conclude that stress
does not cause loss of self-control.

**Discussion**

After analyzing our results using SPSS we found out that stress is
called by lacking time to exercise, lack of socializing and sleeping
disturbance while overworking and un-motivation are not correlated
to stress. Regarding stress outcomes we found out that overeating and
loss of self-control are not associated with stress. Also we found out
the most people prefer listening to music when they are stressed, and
that if stress is caused by work-overload the solution is to decrease
working hours.

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**Conflict of interest**

Author declares that there is no conflict of interest.

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