# Effect of Smoking on Appetite, Concentration and Stress Level

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**Abstract**

**Objective:** Smokers often report that cigarette relieve feeling of stress, improve mood and concentration and can decrease their appetite level. To identify weather a cigarette is a mood altering and appetite suppressant we study the effect of smoking on concentration, stress and appetite level among smokers.

**Design:** We examined if there is a relation between smoking and other variables (age, gender and working hours per week). Several data collected in the form of surveys from smokers and non-smokers and then analyzed using a software program SPSS.

**Main outcome:** Results according to smoker's majority shows that cigarette decrease their stress level and it has been shown that it's the most affected parameters compared to concentration and appetite level that are affected also by smoking.

**Results:** The results of this study show that smoking is related to age and it is affected by the number of working hours. Participants aged between 14 and 35 years, that include students, unemployed and hard-workers smoke the most and have the highest number of cigarettes per week.

**Conclusion:** Based on our study, smoking has an effect on appetite, concentration and stress that is correlated with working hours.

**Keywords:** Appetite, Concentration, Stress Level, Smoking,

## 1. Introduction

Smoking is considered to be a lifestyle practice in which a substance is burned, and the resulting smoke enters a living body's system and absorbed into the blood vessels. It is a common behavior nowadays and is becoming a major habit that affects the lifestyle of many individuals. The burnt substance is made from dried plant leaves, rolled using rice paper in a cylindrical form structure called cigarette (Lindson et al., 2019). Each cigarette contains a mixture of aerosol particles and gasses in addition to a pharmacological alkaloid called nicotine, which is considered to be a highly addictive substance (Kassel, 2000; Arnson et al., 2010). The vaporized combustion of the dried plant leaves produces actives substances in the lungs to be later absorbed into the bloodstream and different body tissues. Each cigarette contains more than 4,000 different chemicals, many of which are toxic and cause health hazards (Ditchburn & Sellman, 2013). While most people are aware of the side effects of cigarette smoking, this bad habit is difficult to break.

Health hazards associated with smoking are illustrated in a form of critical diseases such as: chronic lung and airways disease, cardiovascular diseases, multiple sclerosis, lung cancer as well as other types cancers (World Health Organization, 2001; Nasim et al., 2019; Wang et al., 2019; Sundstrom et al., 2008). Although most people are aware of the hazards for smoking through advertising, conferences and other like school/university presentations, there has not been a significant decline in the number of smokers.

Many studies showed that most people who tend to use cigarette, smoke to control their concentration level and negative emotions like stress reduction. According to a survey study of adolescent smokers, the most frequently mentioned reasons for cigarette smoking were stress reduction and relaxation. Besides, many studies show the relation between smoking and appetite loss in reference to nicotine as an appetite suppressant (Slopen et al., 2013;

Choi et al., 2015; Dozois et al., 1995, Nichter et al., 1997). To address whether cigarette smoking actually has an effect on reducing stress, increase in concentration and decrease in appetite, we select our sample using simple random sample (SRS) and relate them to many factors including gender, age and working hours.

## 2. Methods and Data Collection

The data was collected over two weeks from three different regions: Shouf, Saida and Tyr targeting smokers and non-smokers. The participants of the study were aged between 14 and 74 years. The main aim of these observations and survey is to show the relation between smoking and appetite, concentration, and stress. A total of 141 persons participated in the study and were asked to answer a 23 questions survey including multiple choices and yes/no questions. The variables were set according to the person's social life and mood. The survey consists on the following variables in Table 1.

Table 1. The main variables of the research like: gender, age, work, mood and smoking were compared in general. In addition to the relation between social life and smoking, mood can also interfere as one of the main reasons in smoking habit and addiction to it

| Basic information | | | | | |
|---|---|---|---|---|---|
| Gender | Male | | | Female | |
| Ag (years) | Less than 18 | 18-30 | 30-40 | 40-50 | Above 50 |
| Material Status | Single | | Married | | Widowed |
| Children | 1 | | 2 | | 3 or More |
| Educational Level | No educational background | High school educational background | Undergraduate Degree (associate/ Bachelor) | | Graduate Degree (Master/Doctoral) |
| Work Status | | | | | |
| Type of Work | worker | | Employee | | Self-employed. |
| Work hours/week | 8 hours | | 17 hours | | 40 hours |
| Living Place | | | | | |
| Accommodation type | Apartment | | House | | Shared accommodation with colleague/s |
| Smoking Status | | | | | |
| Do you smoke | Yes | | | No | |
| Cigarettes/week | 1-100 | 101-200 | 201-300 | 301-400 | 401-500 | above 500 |
| First cigarette after waking up | | Answer: | | | |
| Smoking during sickness | Yes/ Number of cigarettes | | | No | |
| Frequent smoking location | Home | Work | Public places | | Others |
| Reason for smoking | change in mood | feeling comfortable | self confidence | | Others |
| Effect of smoking on | Appetite | | Concentration | | Stress (increase/normal/decrease) |
| Information about smoking | General information | | Advanced information | | No Information |
| Stop smoking | Yes | | | No | |
| Quitting duration | Number of Days | | Number of Months | | Number of Years |
| Reason for smoking again | Answer: | | | | |
| Feeling guilty | Yes | | | No | |
| Advice to smoke | Answer: | | | | |

## 3. Results

### 3.1 Descriptive Statistics

Before testing other variables, we detect the number of smokers in the two Gender (Figure 1), according to their age (Figure 2) and work hours per week (Figure 3).

### *Gender*

| Do you smoke * Gender Cross tabulation | | | | | |
|---|---|---|---|---|---|
| Count | | | | | |
| | | | Gender | | |
| | | | Male | female | Total |
| Do you smoke | Yes | | 79 | 25 | 104 |
| | No | | 20 | 17 | 37 |
| Total | | | 99 | 42 | 141 |

| Chi-Square Tests | | | | | |
|---|---|---|---|---|---|
| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| Pearson Chi-Square | 6.263[a] | 1 | .012 | | |
| Continuity Correction[b] | 5.259 | 1 | .022 | | |
| Likelihood Ratio | 5.986 | 1 | .014 | | |
| Fisher's Exact Test | | | | .020 | .012 |
| Linear-by-Linear Association | 6.218 | 1 | .013 | | |
| N of Valid Cases | 141 | | | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.02.
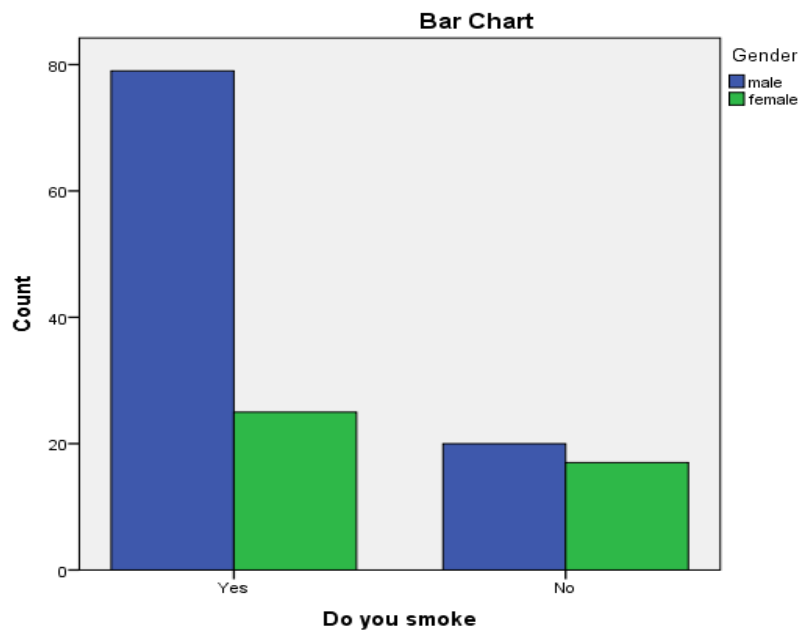
b. Computed only for a 2x2 table.



Figure 1. Relation between smoking and gender

Among 141 participants (99 male and 42 female), 79.79% of male smoke, while 59.52% of female smoke.

*Age*

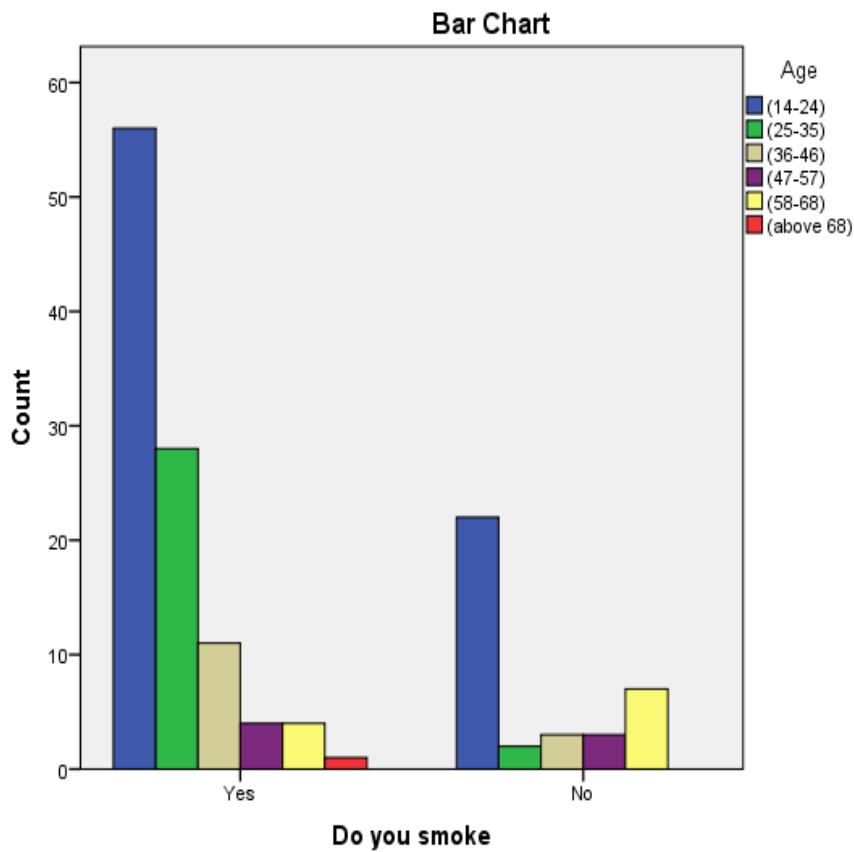| Do you smoke * Age Cross tabulation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Count | | | | | | | | |
| | | Age | | | | | | |
| | | (14-24) | (25-35) | (36-46) | (47-57) | (58-68) | (above 68) | Total |
| Do you smoke | Yes | 56 | 28 | 11 | 4 | 4 | 1 | 104 |
| | No | 22 | 2 | 3 | 3 | 7 | 0 | 37 |
| Total | | 78 | 30 | 14 | 7 | 11 | 1 | 141 |



Figure 2. Relation between smoking and age

71.79% of participants aged between 14 and 24 years smoke, while 93.33% of participants aged between 25 and 35 smoke. Between 36 and 46 years, 78.57% of participants smoke, while between 47 and 57 years, 57.14% smoke. Between 58 and 74 years, only 33.33% of participants smoke.

*Work hours per week*

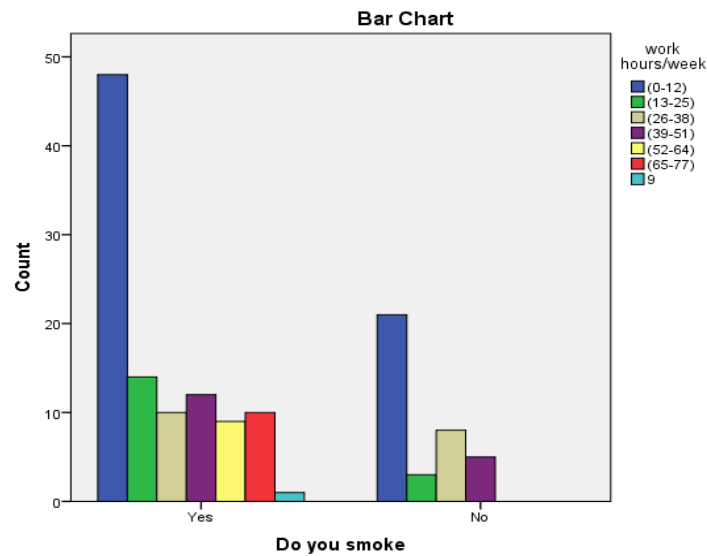| Do you smoke * work hours/week Crosstabulation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Count | | | | | | | | |
| | | work hours/week | | | | | | |
| | | (0-12) | (13-25) | (26-38) | (39-51) | (52-64) | (65-77) | Total |
| Do you smoke | Yes | 48 | 14 | 10 | 12 | 9 | 11 | 104 |
| | No | 21 | 3 | 8 | 5 | 0 | 0 | 37 |
| Total | | 69 | 17 | 18 | 17 | 9 | 11 | 141 |



Figure 3. Relation between smoking and work hours per week

70.58% of participants working between 0 to 12 hours smoke, while 82.35% of participants working between 13 to 25 hours smoke. Between 26 to 38 hours, 55.55% of participants smoke, while between 39 to 51 hours, 70.58% smoke. Between 52 to 77 hours, all participants smoke.

*Age and work hours per week*

| work hours/week * Age Crosstabulation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Count | | | | | | | | |
| | | Age | | | | | | |
| | | (14-24) | (25-35) | (36-46) | (47-57) | (58-68) | (above 68) | Total |
| work hours/week | (0-12) | 53 | 7 | 5 | 1 | 2 | 1 | 69 |
| | (13-25) | 9 | 5 | 1 | 2 | 0 | 0 | 17 |
| | (26-38) | 7 | 4 | 1 | 2 | 4 | 0 | 18 |
| | (39-51) | 2 | 6 | 3 | 2 | 4 | 0 | 17 |
| | (52-64) | 1 | 4 | 3 | 0 | 1 | 0 | 9 |
| | (65-77) | 6 | 4 | 1 | 0 | 0 | 0 | 11 |
| Total | | 78 | 30 | 14 | 7 | 11 | 1 | 141 |

Figure 4. Relation between age and work hours per week

Participants that smoke 1 to 100 cigarettes per week have the highest percentage, while participants that smoke above 500 cigarettes per week have the lowest percentage.

| Cigarettes/week | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | (1-100) | 40 | 28.4 | 39.6 | 39.6 |
| | (101-200) | 32 | 22.7 | 31.7 | 71.3 |
| | (201-300) | 17 | 12.1 | 16.8 | 88.1 |
| | (301-400) | 3 | 2.1 | 3.0 | 91.1 |
| | (401-500) | 7 | 5.0 | 6.9 | 98.0 |
| | (above 500) | 2 | 1.4 | 2.0 | 100.0 |
| | Total | 101 | 71.6 | 100.0 | |
| Missing | System | 40 | 28.4 | | |
| Total | | 141 | 100.0 | | |

Figure 5a. Relation between numbers of cigarettes per week

| Stop smoking | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 56 | 39.7 | 55.4 | 55.4 |
| | No | 45 | 31.9 | 44.6 | 100.0 |
| | Total | 101 | 71.6 | 100.0 | |
| Missing | System | 40 | 28.4 | | |
| Total | | 141 | 100.0 | | |

Figure 5b. Relation between stop smoking activities

| Quitting duration | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less then 1 week | 17 | 12.1 | 29.8 | 29.8 |
| | 1 week | 6 | 4.3 | 10.5 | 40.4 |
| | 1 month | 14 | 9.9 | 24.6 | 64.9 |
| | 3 months | 10 | 7.1 | 17.5 | 82.5 |
| | More then 3 months | 9 | 6.4 | 15.8 | 98.2 |
| | Forever | 1 | .7 | 1.8 | 100.0 |
| | Total | 57 | 40.4 | 100.0 | |
| Missing | System | 84 | 59.6 | | |
| Total | | 141 | 100.0 | | |

Figure 5c. Relation between quitting duration

| Cause of smoking again | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | | 85 | 60.3 | 60.3 | 60.3 |
| | because of surroundings | 4 | 2.8 | 2.8 | 63.1 |
| | I couldn't resist | 25 | 17.7 | 17.7 | 80.9 |
| | No reason | 6 | 4.3 | 4.3 | 85.1 |
| | personal reason | 7 | 5.0 | 5.0 | 90.1 |
| | to decrease stress | 13 | 9.2 | 9.2 | 99.3 |
| | to decrease appetite | 1 | .7 | .7 | 100 |
| | | | | | |
| | Total | 141 | 100.0 | 100.0 | |
| Chi-Square Tests | | | | | |
| | Value | df | Asymptotic Significance (2-sided) | | |
| Pearson Chi-Square | 27.562[a] | 2 | 0.000001 | | |
| Likelihood Ratio | 39.351 | 2 | 2.8515E-9 | | |
| Linear-by-Linear Association | 12.830 | 1 | 0.000341 | | |
| N of Valid Cases | 141 | | | | |

Figure 5d. Relation between returning back to smoking

55.4% of participants stop smoking. 82.5% of them smoked again within 3 months, while only 1.8% quit forever. Among participants that smoked again, 17.7% didn't resist.

### Smoking and mood

We detect the relation of smoking and mood that includes appetite, concentration and stress (Figure 6).

### Smoking and appetite

Does smoking cause a change in appetite level?

$H_0$: Smoking doesn't change in appetite level

$H_a$: Smoking cause a change in appetite level

According to the chi-square test the p-value= 0.000001 and when the p-value is lower than 0.05 its considered significant. Therefore we accept the $H_a$ and reject $H_0$.

So we conclude that smoking cause change in appetite level.

### Smoking and concentration

Does smoking cause a change in concentration level?

$H_0$: Smoking doesn't change in concentration level

$H_a$: Smoking cause a change in concentration level

According to the chi-square test the p-value= 0.000017 and when the p-value is lower than 0.05 its considered significant. Therefore we accept the Ha and reject H0.

So we conclude that smoking cause change in concentration level.

### Smoking and stress

Does smoking cause a change in stress level?

$H_0$: Smoking doesn't change in stress level

$H_a$: Smoking cause a change in stress level

According to the chi-square test the p-value= 0.00005 and when the p-value is lower than 0.05 its considered significant. Therefore we accept the $H_a$ and reject $H_0$.

So we conclude that smoking cause change in stress level.

| Appetite | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Increase | 6 | 4.3 | 5.9 | 5.9 |
| | Normal | 51 | 36.2 | 50.5 | 56.4 |
| | Decrease | 44 | 31.2 | 43.6 | 100.0 |
| | Total | 101 | 71.6 | 100.0 | |
| Missing | System | 40 | 28.4 | | |
| Total | | 141 | 100.0 | | |

| Chi-Square Tests | | | | |
|---|---|---|---|---|
| | | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | | 22.010[a] | 2 | 0.000017 |
| Likelihood Ratio | | 32.390 | 2 | 9.2599E-8 |
| Linear-by-Linear Association | | 12.611 | 1 | 0.000383 |
| N of Valid Cases | | 141 | | |

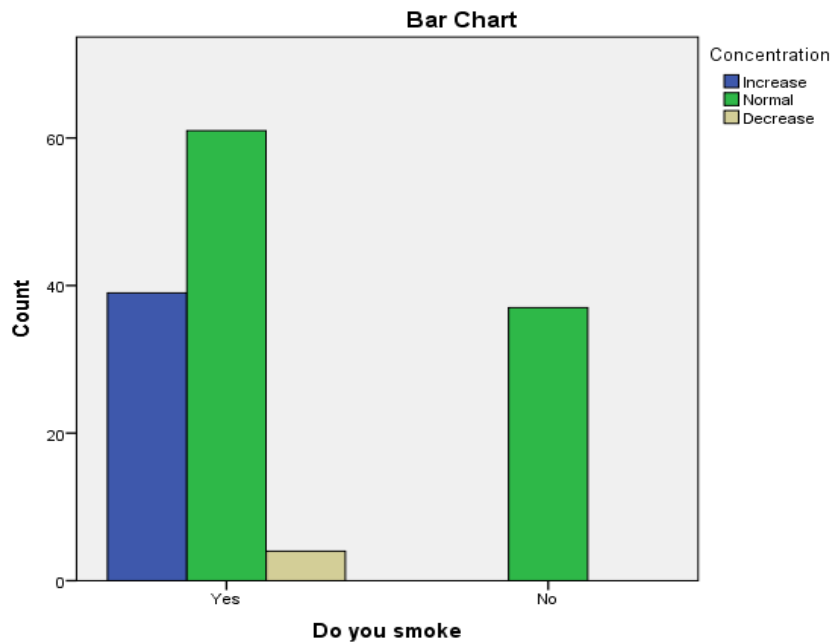a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.05.



Figure 6a. Relation between smoking and appetite

| Concentration | | Percent | Valid Percent | Cumulative Percent | |
|---|---|---|---|---|---|
| Valid | Increase | 39 | 27.7 | 38.6 | 38.6 |
| | Normal | 58 | 41.1 | 57.4 | 96.0 |
| | Decrease | 4 | 2.8 | 4.0 | 100.0 |
| | Total | 101 | 71.6 | 100.0 | |
| Missing | System | 40 | 28.4 | | |
| Total | | 141 | 100.0 | | |
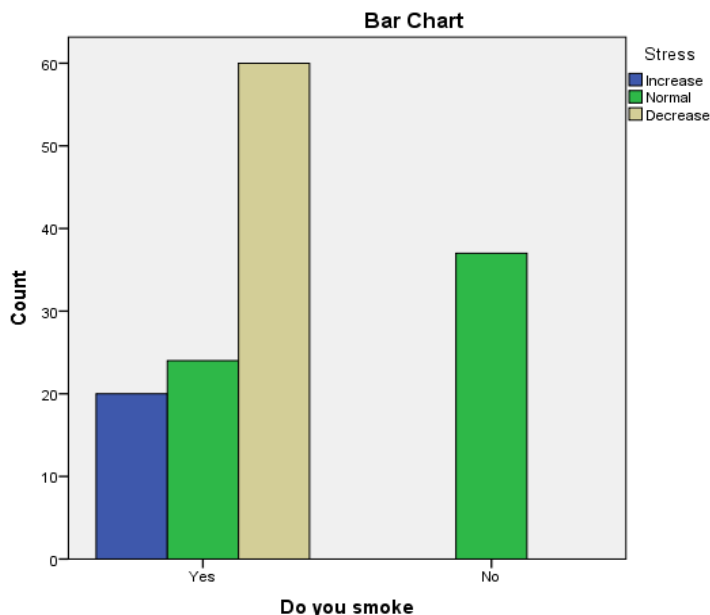
Figure 6b. Relation between smoking and concentration

| Stress | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Increase | 20 | 14.2 | 19.8 | 19.8 |
| | Normal | 21 | 14.9 | 20.8 | 40.6 |
| | Decrease | 60 | 42.6 | 59.4 | 100.0 |
| | Total | 101 | 71.6 | 100.0 | |
| Missing | System | 40 | 28.4 | | |
| Total | | 141 | 100.0 | | |

| Chi-Square Tests | | | |
|---|---|---|---|
| | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 65.788[a] | 2 | 5.1795E-15 |
| Likelihood Ratio | 80.537 | 2 | 3.248E-18 |
| Linear-by-Linear Association | 8.233 | 1 | 0.004114 |
| N of Valid Cases | 141 | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.25.

Figure 6c. Relation between smoking and stress

Among smoker participants, are others whom their appetite level said to be normal. In contrast to it, a high number of smokers, have shown a decrease in their appetite level. However, concentration level for smokers varies between increasing and normal. Additionally, stress have marked a decreasing level.

## 4. Discussion

The results of this study show that smoking is related to age and it is affected by the number of working hours. Concerning age, participants aged between 14 and 35 years, that include students and unemployed (0 to 12 hours/week), and hard-workers (52 to 77 hours/week), smoke the most and have the highest number of cigarettes per week. On the other hand, many parameters were taken into consideration for smokers, such as marital status, children, type of work, etc., data showed that their number of cigarettes smoked per week are more compared to other situation (Data not shown). Furthermore, 55.4% of smokers tried to stop smoking for feeling guilty but only

1.8% of this population understudy were able to quit. However, the highest majority around 82.5% smoked again within 3 months since they are addicted to the irresistible nicotine showing that smoking is a key manipulator of stress.

## 5. Conclusion

Based on our study, smoking has an effect on appetite, concentration and stress. Among participants, appetite level in reference to smokers range between normal and decreasing when smoking, whereas concentration level of smokers ranges between increasing and normal. Concerning stress level, it significantly decreases among smokers. Hence, we conclude that smoking affects these three parameters, and especially stress.

## Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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