Mental Toughness Changes Among Smokers: A Case-control Study

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Abstract

Background: Smoking is one of the biggest challenges in human life today. Stress or negative emotions have a significant impact on smokers. Moreover, mental toughness is a psychological characteristic that enables people to cope with emotional pressure. Therefore, in the present study, changes in mental toughness among smokers were investigated.

Materials and Methods: This questionnaire-based case-control study was conducted on 212 smokers and 295 non-smokers using standard questionnaires. The Mental Toughness Questionnaire with 48 items (MTQ-48) and the Fagerstrom test with 6 items were used to assess mental toughness and nicotine dependence, respectively. Mental toughness consists of 4 components: commitment, challenge, trust, and control. Both paper and online questionnaires were used. The study population was randomly selected from across the country between July and August 2021. All results were self-reported and the accuracy of the collected data was not verified.

Results: A total of 469 subjects, including 197 smokers and 272 non-smokers, were included in the study. Statistical analysis revealed that the mean scores of the challenge, life and emotional control, and self-confidence scales differed statically between the two groups of smokers and non-smokers (P<0.05). In addition, there was a statistically significant difference between female smokers and non-smokers only in life and emotional control (P<0.05). We also found a statistically significant difference in the total mental toughness score between the two groups (P<0.05).

Conclusion: It seems that mental toughness decreases significantly in smokers and this can be considered as one of the potential causes of the increased tendency to smoke.

Keywords: Smoking, Mental toughness, Emotional control, Life control, Confidence

Introduction

Smoking is one of the main challenges in human society. It can affect human health and is a potential risk factor for heart diseases, stroke, respiratory diseases, and so on. These disorders are more common among heavy smokers. Heavy smokers are those who smoke equal to or more than 25 cigarettes a day. Smoking is the leading cause of preventable disease and death in the United States. Although the knowledge about the side-effects and complications of smoking significantly is increased, the number of smokers is high in different societies. About half a million deaths in the United States are attributed to smoking (1, 2). One of the most important factors that play a crucial role in smoking initiation or increase is stress or emotional pressure (2-4). Smokers consider smoking as an agent to reduce stress (5, 6).

In addition, mental toughness is a psychological characteristic that enables people to deal with emotional pressure and life problems more easily (7-9). Mental toughness consists of 4 components: control, commitment, challenge, and trust (3). People with food addiction have less control over their emotions (10). In addition, people with internet addiction have lower mental toughness (11). Smokers also have lower self-confidence, self-esteem, and self-control (12-15). A study on Facebook addicts also showed that they have low self-esteem (16). Research shows low self-esteem in people with various addictions. The components of mental toughness were each measured separately; however, the research on all components of mental toughness in this area was lacking. Since mental toughness decreases significantly in various addictions, we designed a study to evaluate the changes in mental toughness among smokers.

Materials and Methods

This questionnaire-based case-control study was conducted on smokers and non-smokers using standard questionnaires. The Mental Toughness Questionnaire and Fagerstrom Test for Nicotine Dependence (FTND) were used in this study to assess mental toughness and nicotine dependence, respectively. A standard questionnaire...
was also used to collect demographic data such as age, gender, and so on. The Mental Toughness Questionnaire (MTQ) used in this study was developed by Clough and contained 48 items. It consists of four components including control, trust, challenge, and commitment. Each of the control and trust components includes two other sub-categories, namely emotional and life control and self and interpersonal confidence, respectively (3). The 6-item FTND, developed by Heatherton et al in 1991, was used to assess the intensity of addiction to nicotine (10). Both paper and online formats of the questionnaires were available to participants. Subjects were allowed to choose the online or paper format. The online format of the questionnaires was created using Google Docs (11).

The subjects were selected from all over Iran. The online format was shared on some scientific social media from July to August. The paper format was distributed to friends who dealt with people at work. If they tended to help us, they shared it with their friends and families. All results were self-reported and the accuracy of the data was not verified. All incomplete questionnaires were excluded from the study. Data were analyzed using SPSS version 18.0. Results were expressed as mean ± standard deviation (SD) of quantitative variables. To compare the mean of quantitative variables between the two groups, a t-test was performed.

### Results

A total of 469 subjects, including 197 smokers and 272 non-smokers, were included in the study. The mean age of smokers and non-smokers was reported to be 35.7 ± 9.4 and 37.1 ± 7.8 years, respectively (P > 0.05). Among smokers and non-smokers, the most common educational level was diploma (n: 78, 39.5% vs n: 91, 33.5%). About 60% of smokers and about 50% of non-smokers were married (P > 0.05). About 40% and 50% of smokers and non-smokers were unemployed (P > 0.05). There was no significant difference between the mean income of the two groups (P = 0.2) (Table 1).

Statistical analysis revealed that the mean scores of the challenge, life and emotional control, and confidence scales were statistically different between the two groups (P < 0.05). Further analysis showed a statistically significant difference between female smokers and non-smokers only in life and emotional control (P < 0.05). We also found a statistically significant difference in the total mental toughness score between the two groups (P < 0.05) (Table 2).

### Discussion

In this study, we examined the changes in mental toughness between smokers and non-smokers. Our hypothesis was that mental toughness is reduced in smokers and that this reduced mental toughness is a factor that makes them more susceptible to smoking. The results of this study partially support our hypothesis. Some areas of mental toughness were significantly reduced in smokers compared to non-smokers. The results show that challenge, life control, emotional control, and self-confidence are significantly different between smokers and non-smokers. Lower life control and even lower emotional control could be considered as factors that encourage smoking. One of the main reasons for smoking cited by smokers is the need for smoking for stress management and emotional control. A person with low emotional control most likely needed a contributing factor to cope with an emotional challenge (10, 11). As noted in this study, emotional control is lower in smokers than in non-smokers. One of our main findings was a significant difference in life control and emotional control between smoking and non-smoking women. We also found a statistically significant difference in the total mental toughness score between the two groups.

It appears that individuals with lower mental toughness are likely to smoke due to lower levels of challenge, life and emotional control, and confidence (10, 11). They are probably unable to solve relevant problems due to their lower level of mental toughness. Several studies have shown that people with various addictions have lower mental toughness scores (10, 11, 16). In the study by Wang et al on internet addiction and mental toughness in college students, lower mental toughness was found.

### Table 1. Demographic Characteristics of the Study Population

<table>
<thead>
<tr>
<th></th>
<th>Smokers</th>
<th>Non-smokers</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male/female</td>
<td>185/12</td>
<td>256/16</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Age</td>
<td>35.7</td>
<td>37.1</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>53</td>
<td>67</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Diploma</td>
<td>78</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>Bachelor</td>
<td>51</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Master</td>
<td>15</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>113</td>
<td>137</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Single</td>
<td>84</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>81</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>53</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Income (mean)</td>
<td>5250000</td>
<td>6125000</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

### Table 2. Comparison of the Components of the MTQ-48 Between Smokers and Non-smokers

<table>
<thead>
<tr>
<th>Components of MTQ-48</th>
<th>Smokers</th>
<th>Non-smokers</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>3.31 ± 0.42</td>
<td>3.75 ± 0.36</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Commitment</td>
<td>3.61 ± 0.28</td>
<td>3.45 ± 0.68</td>
<td>0.02</td>
</tr>
<tr>
<td>Challenge</td>
<td>3.37 ± 0.52</td>
<td>3.45 ± 0.72</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Confidence</td>
<td>3.38 ± 0.34</td>
<td>3.76 ± 0.87</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

MTQ48: Mental toughness questionnaire 48.
in people with Internet addiction (11). Another study showed that people with binge eating disorder have lower emotional control (10).

Based on our study and these studies, people with lower mental toughness are more prone to developing internet, eating, and smoking addictions. Further studies are needed on this topic. For a more accurate interpretation of the results, other factors such as parents’ smoking, attitudes towards smoking, anxiety and stress, community attitudes towards smoking, and friends’ smoking should be considered in addition to mental toughness (17-19).

Although our results are interesting, some limitations of our study, such as self-report of data without checking validity, use of a questionnaire-based design, and recruitment of a small study population, should be considered. We have some recommendations for further studies. This study can be conducted on people with drug and alcohol dependence. The study can be conducted with a larger study population. In addition, it can be conducted prospectively after some interventions such as education through social media or national media networks, group training, and academic training. Our aim was to conduct a larger prospective study on a large number of adolescent students.

**Conclusion**

There was a statistically significant difference in mental toughness between smokers and non-smokers. Additionally, there was a significant difference in life control and emotional control among females. Because of the potential impact of mental toughness on smoking, preventive education programs can be used to improve mental toughness, thereby reducing smoking rates.

**Competing Interests**

The authors declare no conflict of interests.

**References**
