The Effectiveness of an Education Program on Stages of Smoking Behavior for Workers at a Factory in Turkey

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Abstract: The aim of the study was to determine the smoking behavior based on “stages of change” model of the workers and to assess the effectiveness of a education program at a workplace. The first step was descriptive and the second step was an experimental study. The intervention group received an smoking cessation education. Before intervention 36% of the intervention group were at precontemplation stage. Six months after the intervention decline the percentage of those at precontemplation stage was significantly lower. In the control group there was not a significant reduction in the percentages of smokers at precontemplation stage before and after the intervention. After the 6 months the “maintenance” stage rates were 6% and 2% in the intervention and control groups, respectively. The study showed that the education in factory for workers could not be successful in quitting, however it impacted the intention and preparation of to quit in the future.

Key words: Smoking cessation, Transtheoretical model, Workers, Worksite, Intervention studies

Introduction

Smoking is one of the most important public health problems today. It is known that 3 million deaths per year occurred because of tobacco products and it is estimated that, if the current trend remains unchanged, this number will increase to 10 million in 2020. Seventy percent of these deaths are supposed to occur in developing countries1). Turkey, with a population of seventy million is a leading tobacco producer, and also a leading consumer. Approximately 40% of the adult population currently smokers. Turkey passed the ‘Prevention of the Harms of Tobacco Products Law’ in 1996. By banning advertising, sales to minors and smoking in public places, it was seen as an important milestone in tobacco control in Turkey2).

Workplaces are potential environments for a large number of people to stop smoking. They are also important for the educational efforts to reach to lots of people who are beyond the limits of other channels. People succeed to stop smoking by means of workplace smoking cessation programs and practices of workplaces without tobacco3).

The main components of the smoking control efforts in workplaces and the supportive measures to stop smoking are tobacco control policies. These policies help to decrease the number of workers who are exposed to tobacco smoke and contribute to the decrement or cessation of smoking among workers4).

For workers’ health, a coordinated approach that targets the workers and the directors and that provides multidimensional options is more useful. To increase the affectivity of prohibitions for smoking cessation in workplaces, following efforts are recommended: the encouragement of smoking cessation, social support to stop smoking, building social norms that prevent smoking, keeping the promises for a healthy working environment, trying to prevent smoking in workers’ families, efforts that improve workers’ health and constituting public health policies that strictly support tobacco control5).
Transtheoretical model is a contemporary psychological framework that attempts to explain intentional health behavior change as a process that occurs over time as a function of behavioral history and motivation\(^6\). The Transtheoretical model consists of five “stages of smoking behavior”: (a) Precontemplation (individuals are smoking and not intending to quit smoking in the next six months), (b) Contemplation (individuals are smoking but are considering quitting in the next six months), (c) Preparation (individuals are smoking but are planning to quit smoking in the next thirty days), (d) Action (individuals have actually quit smoking and been abstinent for less than six months), and (e) Maintenance (individuals have quit smoking and been abstinent for more than six months after initial quitting)\(^6\).

There are many studies about effectiveness of education program on smoking status. However, there are not many studies about the effectiveness of education program on each stage of change and to our knowledge this is the first one in Turkey.

The aims of this study are: to determine 1) the smoking status of workers employed at Malatya GAP Textile Factory, 2) the stages of smoking behavior according to transtheoretical model of the workers and 3) the effect of an education program about smoking cessation on stages of smoking behavior.

**Subjects and Methods**

The GAP Textile Factory in which we conducted our study is found in Malatya Organized Industry Area. Malatya is located in the east of Turkey has a population around 850,000 people. The study is conducted in the weaving section of the factory. A total of 850 workers who work in the weaving section of GAP Textile Factory were included in the study. Smoking was forbidden during working hours. Thus a special room was designated during working hours for the smokers. Smoking was allowed in the restaurants or cafes inside the factory building outside working hours. This study was conducted to determine the smoking prevalence and the effectiveness of the education program. The study was conducted in two steps. The first step was descriptive and the second step was an experimental study designed in the form of pretest-posttest two groups. The workers were asked to fill in a questionnaire. Six hundred forty-five of the 850 workers (75.8%) filled in this questionnaire.

In the second step of the study, among the current smokers 100 workers were assigned to intervention group and 100 workers assigned to control group. The intervention and control groups were constituted by matching the age, educational status, working periods and amounts of smoking. The workers in each group were selected from different shifts so that no possible interaction occurs.

The workers were administered a questionnaire including items about their demographic characteristics, smoking status and questions to determine in which stage of change they were. Prochaska’s ‘stages of change model’ was chosen as the guideline\(^7\). The main questions to determine the stages of change model were: 1) Do you intend to quit smoking in the next six months? 2) Do you intend to quit smoking in the next 30 d? 3) Did you try to quit smoking last year? 4) Did you try to quit smoking last six months? 5) If you quit smoking, how long has it been?

The period of the education was three weeks. The second questionnaire (posttest) was administered to the intervention and control groups 6 months after finishing the education.

Each person in the intervention group was given a number and grouped into four same size in order. The education studies were conducted. The education was divided into three chapters of fortyfive minutes and conducted once a week for each group, and it was a presentation supported by interactive education techniques. No education were applied to the control group.

The education program was based on the “Life without smoking in 7 steps”, that is the smoking cessation program of American Lung Society\(^8\). In the beginning of the education program, the educator talked to the group about why they smoked, the costs of smoking and benefits of quitting. Then the education was applied step by step in which step 1: Understanding their habit and addiction, step 2: Building their motivation to quit, step 3: Developing their quitting plan, step 4: Preparing for quit day, step 5: Quitting, step 6: Talking about their first two nonsmoking week, and step 7: Talking about their first six months (Deep breathing techniques, managing stress e.g).

Prior to commencing research, this study received approval from the Directorate of GAP Textil Factory in Malatya and permission was received from each of workers. Moreover permission to conduct this study was granted by the Board of Ethics at Inonu University Turgut Ozal Medical Center in Malatya. However, following the completion of the study, all smoking workers in the factory were given a text which contained information about the hazardous effects of smoking and ways of quitting.

The second questionnaire (posttest) was administered to the intervention and control groups 6 months later after.

Data were analysed in SPSS for Windows. We used chi-square to compare the outcomes between the intervention
and control groups, separately for each stage. We compared before-after outcomes with McNemar test separately for each stage in the intervention and control group.

Results

The youngest of the workers included in the study was 21 yr old whereas the oldest one was 49. The mean age was \(29.3 \pm 4.8\). All of the workers were males. In terms of marital status, 81.7% were married and 18.3% were single. Of the workers 23.1% were graduates of primary school, 32.4% were graduates of the middle school and 44.5% were graduates of high school. Most of the workers were employed in working shifts (81.4%).

The smoking status of workers included in the study was presented in Table 1. Four hundred sixty-nine workers (65.9%) stated to smoked currently, 44 workers (6.8%) stated to quit smoking (They had done for more than 6 months) and 176 workers (27.3%) stated that they never smoked (Table 1).

The smoking behavior stages of the smoker and quitted workers according to ‘stages of change model’ was presented in Table 1. It was found that 31.0% of the workers were not intending to quit smoking (precontemplation), 30.5% were considering to quit smoking in the next 6 months (contemplation), 29.2% were planning to quit in the next 30 d (preparation), none of worker were in action stage and 9.3% were been abstinent for more than 6 months after quitting (maintenance).

The stages of change model of the workers in study group at the beginning and after 6 months is presented in Table 2. In the beginning, 36.0% of the workers in the intervention group was not intending to stop smoking (precontemplation) whereas after the 6 month following the education this ratio dropped down to 20.0% and the decrease in the ratio was found to be statistically significant \((p<0.05)\). In the beginning 31.0% of the workers in the intervention group was in the “preparation” stage, whereas this ratio was increased to 43.0% 6 months after the education and this increase was found to be statistically significant \((p<0.05)\).

In the beginning, 37.0% of the workers in the control group was not intending to stop smoking and after 6 months this ratio dropped down to 33.0%; in the beginning, 35.0% of the workers in the control group were in contemplation stage and after 6 months this ratio was increased to 40.0% creating. In the beginning the ratio of the workers in the control group who were in preparation stage was 28.0% and this ratio was 25.0% after 6 months. The difference in the ratio of the workers in the preparation stage in control group is found to be statistically significant \((p<0.05)\).

Of the workers 6% in the intervention group and 2% of the workers in the control group continued to be smoke-free after the 6 months (maintenance).

Discussion

All 645 workers included in the study were males. This situation is because no female workers were employed in the factory.

Of the workers 65.9% were current smoker, 6.8% stated to be ex-smokers. In a study conducted in 1988 to determine the extend of smoking in our country, the frequency of smoking among males was found to be 62.8%9). In different studies male workers were found to to smoke in frequencies of 61.7%10), 67.0% 11) in Malatya Tekel and Sümerbank Factories, Gemlik Industry Site respectively. The smoking frequency among workers is high in our study as well and it is higher than the rest of the public. The high frequency of smoking among workers may result from tough working conditions, lack of social support, extra working hours and economic short cuts. In addition, a break for smoking may be the only valid reason for a time out for workers who are expected to perform a lot physically and mentally.

In our study, the finding that the ratio of the workers who did not intend to quit was lower and the ratio of the ones who were in contemplation phase and in preparation to quit were higher is blissful. This may be the result of the ‘Law to prevent the hazardous effects of tobacco products’, numbered 4207, which was conducted in 1996. By this law, smoking is prohibited in public transportation vehicles, sports areas, all art and education institutions, health facilities and in worksites where 5 or more than 5 people work12). This law is an important step in tobacco control, however it is not fully effective.

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Table 1. Smoking status of workers and ‘stages of change model’ at the beginning

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>Stages of change</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study group</td>
<td>Current</td>
<td>145</td>
<td>31.0</td>
</tr>
<tr>
<td></td>
<td>Precontemplation</td>
<td>143</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td>Contemplation</td>
<td>137</td>
<td>29.2</td>
</tr>
<tr>
<td></td>
<td>Preparation</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Action</td>
<td>44</td>
<td>9.3</td>
</tr>
<tr>
<td>Ex-smokers</td>
<td>Maintenance</td>
<td>176</td>
<td>33.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td>469</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>645</td>
<td></td>
</tr>
</tbody>
</table>
In the beginning, the stages of smoking behavior of workers were no statistical difference between intervention and control group. In the beginning, 36.0% of the intervention group were not intending to quit smoking, however this ratio dropped down after the education program and the difference was found to be significant.

The ratio of the workers in the intervention group who were in preparation to quit increased whereas this ratio decreased in the control group. Both the increase in the intervention group and the decrease in the control group were found to be statistically significant. This indicates that the education program is helpful in progressing to further steps of “stages of change model”.

In a factory in Japan, the workers were consulted individually by a physician. Afterwards, 12.9% of the intervention group and 3.1% of the control group was found to stop smoking. The difference between the control and intervention groups was found to be statistically significant13).

In another study conducted in Japan, a program of 6 chapters is administered. The ratio of quitting was found to be 17.2%14).

A longer education or individual counseling might strengthen the intervention effect. The quit rate reported are based on the follow up at 6 months. However, it is not certain what proportion will continue quitting for a longer duration.

Although the education program is not fully effective in quitting, it is effective in increasing the intention and preparation of quitting. This study showed that short-term education program is useful strategy to promote smoking cessation among the workers. This trial is the first in a factory in Malatya. Other education programs should target other factories. A comprehensive tobacco control programme is needed in the worksites to move more smokers into the action stage, so that individual counseling can have a greater impact. Policies against smoking should be constituted in workplaces and these should be applied. Programs should be initiated for the smoking workers to quit.

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### References


