CONTRIBUTION OF CERTAIN INDIVIDUAL FACTORS AND OF THE ENTOURAGE TO THE HEAVY SMOKER STATUS IN TIMIS COUNTY STUDENTS

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CONTRIBUTION OF CERTAIN INDIVIDUAL FACTORS AND OF THE ENTOURAGE TO THE HEAVY SMOKER STATUS IN TIMIS COUNTY STUDENTS (Abstract): The study aimed for a hierarchy of factors associated to the heavy smoker status in young people.

Material and methods: The representative sample of students included into the study totalized 2076 young subjects in Timis County universities, with urban residence, 62.5% girls and 37.5% boys, aged between 18-25 years. The working method was the transversal population study based on the CORT 2004 questionnaire regarding health risk behaviors in adolescents and young people. Data processing used the EpiInfo software. The strongest predictors of the heavy smoker status in young people are the existence of suicidal thoughts, the increased number of friends who smoke the smoker status without the wish to quit.

Results and conclusions: Students with an increased intensity of smoking more frequently experienced suicidal thoughts as compared to students smoking with a medium intensity. Students with a medium smoking intensity have significantly more friends who smoke as compared to students who are light smokers. Students, who tried to quit smoking, smoke significantly less cigarettes a day than those who did not wish to quit smoking. Keywords: STUDENTS, HEAVY SMOKER STATUS, ASSOCIATED FACTORS

In a study conducted in New Zealand (1), the authors demonstrated that early tobacco consumption was a important predictor for suicidal ideation but lost significance when increased levels of stress and depression, as well as low attachment for parents, were included into the multivariate model.

The affiliation of adolescents and young adults with friends who practice risk behaviors, especially substance consumption, is a strong predictor for the adherence to such behaviors (2, 3). The smoking habit in friends and the perception of smoker friends are associated to the smoking behavior in adolescents (4, 5, 6).

Individuals who cease smoking benefit from a significant decrease of the risk for all fatal disturbances (7). There is a clear relation between the age when a smoker quits and the risk of premature death. While smoking cessation has benefits over the general mortality, the benefit degree varies depending on the disease (8).

MATERIAL AND METHODS
The representative sample of Timis County students totalized 2976 young subjects from Timis County universities, urban residents (the size of the stratified cluster sample was determined with the the EpiInfo software). The gender distribution
was: 62.5% girls and 37.5% boys. The students were aged between 18-25 years, the highest proportion being aged 21 years, 27.2%.

The working method was the transversal population study based upon the CORT 2004 Questionnaire regarding health risk behaviors in adolescents and young people, designed on the occasion of the type A CNCSIS grant, code 1167, 2003-2005, entitled: “Assessment of the dimensions of risk behaviors in high school pupils and young subjects in undergraduate, postgraduate, occupational and university teaching systems in Timis County”. The CORT 2004 Questionnaire represents an original working instrument belonging to the research team of the project and it was built upon other questionnaires used for the investigation of risk behaviors, mainly the European ESPAD and the American YRBS. The Questionnaire was validated by the Commission of Ethics of the “Victor Babeş” University of Medicine and Pharmacy Timişoara, Romania.

High school pupils were only included into the study after freely expressed informed consent was obtained from each participant. The general response rate in students was 40%. Data processing and interpretation used advanced modern methods of medical statistics, with the EpiInfo software, version 3.5.1, 2008.

RESULTS AND DISCUSSION

1. The heavy smoker status. The logistic regression test was applied to determine the impact of multiple personal and entourage-linked factors on the heavy smoker status (high intensity smoking means over 10 cigarettes/day) in young people. The model includes 19 independent variables (gender, last school graduated by the father, last school graduated by the mother, satisfaction concerning the financial situation of the family, number of friends who smoke, number of friends who get drunk, number of friends who consume marijuana, smoking status of the father, mother and siblings, number of days he/she skipped classes, school grades, age when he/she smoked the first cigarette, the wish to quit smoking, number of days of binge drinking, marijuana consumption, feelings of sadness, suicidal thoughts, knowledge on the effects of smoking). The model including these predictors is statistically significant, $\chi^2(19)=110.36$, p<0.001, showing that the proposed model may discriminate between young people who smoke and those who do not. The model may explain between 21.7 and 30.0% of the heavy smoker status variance and may correctly classify 73.8% of the cases (tab. I).

The strongest predictor of the heavy smoker status in young people is the presence of suicidal thoughts, those reporting these thoughts having 2.18 times more chances to be high intensity smokers. The increased number of friends who smoke is an important predictor, young people with a high number of smoker friends having 2.1 times more chances to smoke with high intensity than those without friends who smoke, provided the other factors in the model are constant. The smoker status without the wish to quit is also an important predictor, young people who do not have the wish to cease smoking having 1.7 times more chances to smoke with increased intensity. The other statistically significant predictors are: the increased number of friends who smoke marijuana, the high number of days he/she skipped school, the non-smoker status of the mother and the female gender.
Contribution of certain individual factors and of the entourage to the heavy smoker status

TABLE I

Logistic regression for predicting the heavy smoker status in young people

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>OR</th>
<th>95% C.I. for EXP(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>min</td>
</tr>
<tr>
<td>Gender (1)</td>
<td>-.528</td>
<td>.266</td>
<td>3.95</td>
<td>1</td>
<td>.047</td>
<td>.590</td>
<td>.350 .992</td>
</tr>
<tr>
<td>Last school graduated by the father</td>
<td>-.116</td>
<td>.128</td>
<td>.83</td>
<td>1</td>
<td>.362</td>
<td>.890</td>
<td>.693 1.143</td>
</tr>
<tr>
<td>Last school graduated by the mother</td>
<td>-.056</td>
<td>.134</td>
<td>.17</td>
<td>1</td>
<td>.674</td>
<td>.945</td>
<td>.727 1.229</td>
</tr>
<tr>
<td>Satisfaction regarding the family financial status</td>
<td>-.117</td>
<td>.123</td>
<td>.90</td>
<td>1</td>
<td>.342</td>
<td>.890</td>
<td>.699 1.133</td>
</tr>
<tr>
<td>Smoker status of the father (1)</td>
<td>-.123</td>
<td>.239</td>
<td>.26</td>
<td>1</td>
<td>.606</td>
<td>.884</td>
<td>.554 1.412</td>
</tr>
<tr>
<td>Smoker status of the mother (1)</td>
<td>-.499</td>
<td>.248</td>
<td>4.04</td>
<td>1</td>
<td>.044</td>
<td>.607</td>
<td>.373 .988</td>
</tr>
<tr>
<td>Smoker status of siblings (1)</td>
<td>.077</td>
<td>.236</td>
<td>.10</td>
<td>1</td>
<td>.743</td>
<td>1.080</td>
<td>.681 1.714</td>
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<tr>
<td>Number of friends who smoke</td>
<td>.744</td>
<td>.207</td>
<td>12.89</td>
<td>1</td>
<td>.000</td>
<td>2.105</td>
<td>1.402 3.159</td>
</tr>
<tr>
<td>Number of friends who get drunk</td>
<td>.313</td>
<td>.184</td>
<td>2.88</td>
<td>1</td>
<td>.089</td>
<td>1.367</td>
<td>.953 1.961</td>
</tr>
<tr>
<td>Number of friends who smoke marihuana</td>
<td>.550</td>
<td>.273</td>
<td>4.05</td>
<td>1</td>
<td>.044</td>
<td>1.733</td>
<td>1.015 2.960</td>
</tr>
<tr>
<td>Number of days he/she skipped school</td>
<td>.384</td>
<td>.091</td>
<td>17.81</td>
<td>1</td>
<td>.000</td>
<td>1.468</td>
<td>1.228 1.754</td>
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<tr>
<td>School grades at the end of the last semester</td>
<td>.177</td>
<td>.145</td>
<td>1.47</td>
<td>1</td>
<td>.224</td>
<td>1.193</td>
<td>.897 1.586</td>
</tr>
<tr>
<td>Age when he/she smoked the first cigarette</td>
<td>.135</td>
<td>.118</td>
<td>1.30</td>
<td>1</td>
<td>.254</td>
<td>1.144</td>
<td>.908 1.442</td>
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<tr>
<td>Attempt to cease smoking</td>
<td>.567</td>
<td>.273</td>
<td>4.32</td>
<td>1</td>
<td>.038</td>
<td>1.763</td>
<td>1.033 3.008</td>
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<tr>
<td>Number of binge drinking days</td>
<td>.137</td>
<td>.107</td>
<td>1.63</td>
<td>1</td>
<td>.201</td>
<td>1.147</td>
<td>.930 1.414</td>
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<td>Marijuana consumption</td>
<td>-.037</td>
<td>.319</td>
<td>.014</td>
<td>1</td>
<td>.907</td>
<td>.964</td>
<td>.515 1.802</td>
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<tr>
<td>Sadness</td>
<td>.264</td>
<td>.274</td>
<td>.93</td>
<td>1</td>
<td>.334</td>
<td>1.303</td>
<td>.762 2.227</td>
</tr>
<tr>
<td>Suicidal thoughts</td>
<td>.781</td>
<td>.354</td>
<td>4.87</td>
<td>1</td>
<td>.027</td>
<td>2.184</td>
<td>1.092 4.370</td>
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<tr>
<td>Knowledge on the effects of smoking (1)</td>
<td>-.165</td>
<td>.282</td>
<td>.34</td>
<td>1</td>
<td>.557</td>
<td>.847</td>
<td>.488 1.472</td>
</tr>
<tr>
<td>Constance</td>
<td>-3.30</td>
<td>.835</td>
<td>15.63</td>
<td>1</td>
<td>.000</td>
<td>.037</td>
<td></td>
</tr>
</tbody>
</table>

Legend: (1) = first category that was taken as reference to categorical variables introduced in the model; B = β coefficient; SE = standard error of the β coefficient; Wald = Wald coefficient; df = degrees of freedom; Sig. = p value; OR = odds ratio

The strongest predictor of the heavy smoker status in young people is the presence of suicidal thoughts, those reporting these thoughts having 2.18 times more chances to be high intensity smokers. The increased number of friends who smoke is an important predictor, young people with a high number of smoker friends having 2.1 times more chances to smoke with high intensity than those without friends who smoke, provided the other factors in the model are constant. The smoker status without the wish to quit is also an important predictor, young people who do not have the wish to cease smoking having 1.7 times more chances to smoke with increased intensity. The other statistically significant predictors are: the increased number of friends who smoke marijuana, the high number of days he/she skipped school, the non-smoker status of the mother and the female gender.

2. Suicidal thoughts during the previous year. In the non-smoker group 7.3%
(102) students experienced suicidal thoughts during the previous year. In the smoker group, the percent of students with suicidal thoughts is 10.2% (65). The smoker group had 1.42 times more frequent suicidal thoughts during the previous year as compared to the non-smoker group, $\chi^2=4.61$, $p<0.05$ (fig. 1).

Fig. 1. Percent distribution of students according to the existence of suicidal thoughts and to the smoker status

Researchers conducted by Choi et al. (9) revealed that persons without depression and who did not smoke increased their chances to develop depression if they started smoking. Further studies (10) found that smoker adolescents and those who were ex-smokers at the beginning of the study had 1.5-2 times higher chances to develop depression symptoms in the future as compared to non-smokers.

3. Smoking among friends. Of the friends of non-smoker students, several smoke in a percent of 56.5% (787), most of them smoke in a percent of 31.1 (433) and all of them in a percent of 3.3 (46). 9.1% (127) of the non-smoker students have no friends who smoke. Of the friends of smoker students the majority smoke in a percent of 63.3 (407), several in a percent of 26.0 (167) and all in a proportion of 9.2% (59).

1.6% (10) of the smoker students has no friend who smokes. Smoker students have significantly more friends who smoke as compared to non-smoker students, $U=267197$, $z=-16.11$, $p<0.001$, the association being of medium size (fig. 2).
Regarding the non-smoker students, we found that smoking intensity is influenced by the number of friends who smoke, \( H(2)=37.26, \ p<0.001 \). We applied the Mann-Whitney test to investigate this result. We applied the Bonferroni correction and the effects were reported to a level of significance of 0.0167. We found that students with a medium smoking intensity have significantly more friends who smoke, as compared to light smoker students, \( U=15342.5, \ z=-4.07, \ p<0.001 \), and there are no differences between students who smoke with medium or high intensity regarding the number of friends who smoke (fig. 3).

The similarity or homogeneity of tobacco consumption patterns in adolescents and their peers, led researchers to the conclusion (6, 11) that the entourage of friends influences the smoking habit in adolescents. The most often incriminated mechanism is social learning (12), by which adolescents learn about the use of tobacco by observing friends who smoke and they are encouraged to use tobacco by perceiving apparent advantages such as gaining group acceptance or establishing an apparent social identity. Other transmission mechanisms from friends are direct pressure to smoke and offering cigarettes and other tobacco products.

4. Attempt to cease smoking. Regarding the attempt to cease smoking, 25% (513) of respondents admit they tried to quit smoking and 9.1% (186) did not try to quit smoking (fig. 4).
Fig. 3. Percent distribution of smoker students according to the number of friends who smoke and to the intensity of smoking.

Fig. 4. Percent and gender distribution of students according to their attempt to quit smoking.
After excluding the students who do not smoke, we wanted to find out if there were gender differences regarding the attempt to quit smoking. There are no significant differences in the distribution of gender related responses, \( p>0.05 \).

Using only the smoker students, we found out that those who tried to quit, smoked their first cigarette at a significantly older age than those who did not try to quit smoking, \( U=38623, z=-4.08, p<0.001 \). These results are concordant to other studies (13), concerning the fact that young age at the onset of smoking is associated to the permanent smoker status at adult age.

Naive smoking experiments in adolescents frequently transform them into regular users, frequently causing a strong addiction which counteracts smoking cessation efforts. Efforts to reduce smoking in future adults must focus on experimental as well as on regular smoking.

In smoker students, we found that those who tried to quit, smoke significantly less cigarettes a month than those who did not wish to cease smoking, \( U=38931, z=-4.13, p<0.001 \). Using only smoker students, the results showed that those who tried to cease smoking, smoke significantly less cigarettes a day than those who did not wish to cease smoking, \( U=36473, z=-4.77, p<0.001 \).

Previous research (14, 15) demonstrated that the earlier individuals start smoking the higher are their chances to develop pulmonary carcinoma or to have an altered health during adult life. Globally, one third of the young people who become regular smokers to adult age will die due to consequences of smoking (16). There is evidence that sometimes smoking is the first step to triggering the abuse of other substances, and preventing or delaying this first step will decrease the risk for the use of other substances (17-19).

**CONCLUSIONS**

The strongest predictors of the heavy smoker status in young people are the existence of suicidal thoughts, the increased number of friends who smoke the smoker status without the wish to cease smoking.

In non-smokers / smokers we obtained the following results: 7.3% / 10.2% of the students had suicidal thoughts during the previous year. Students who smoke at high intensity more frequently experienced suicidal thoughts as compared to medium intensity smokers.

The friends of non-smoker / smoker students also smoke: several in 56.5% / 26% of cases; most in 31.1% / 63.3%; all in 3.3% / 9.3%. Students who smoke with medium intensity have significantly more friends who smoke as compared to light smoker students.

Depending on the attempt to cease smoking, 25.0% of respondents tried to cease smoking and 9.1% did not. Students, who tried to cease smoking, smoke significantly less cigarettes a day than those who did not wish to quit.

**REFERENCES**

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