Interest of a BAC Simulator in Educational Programs

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ABSTRACT

Most of the educational programs in the field of alcohol and risk are based on classical medium, no interactive, like TV spots, posters, slogans, brochures. It appeared interesting to study the impact of pedagogic system in evaluation and educational programs in professional and military environment.

The SIMALC, BAC Simulator allows to show, on a screen, the BAC curves resulting from a fictitious intake of alcohol, choosen by the subject. The simulator integrates different parameters linked: to the subject (sex, age, weight); to the beverage (wine, beer, alcohol); to the meals.

The curves resulting from the BAC simulator are very realistic and authorize an educational use on a personalized and interactive way. Two studies have been led, one in companies of Public Transportation (A), and one in the Army (B). The results of those 2 studies are analysed and discussed.

INTRODUCTION

Most of the prevention campaigns concerning the risks of excessive alcohol consumption are based on classical means of information like TV spots, posters, slogans, booklets.

Those means of information are not interactive and nothing allows to evaluate their liability in the population which perceive them.

Even more, “a priori” attitudes of each subject frequently erect a barrage to this liability. It seemed interesting to study the interest of an interactive educational system on alcohol consumption in different populations of adults:

• employees of public transports (RATP, Subway, SNCF railways),
• French army servicemen (draftee or enlisted).

DESCRIPTION OF THE BAC SIMULATOR

The SIMALC, Simulator of Alcohol level allows to make visual, on a screen, the BAC curves resulting from a fictitious intake of alcohol, choosen by the subjects. It shows also the resulting statistical risk of accident.
The simulator integrates different parameters linked:

- to the subject (sex, age, weight, height),
- to the beverage (wine, beer, alcohol),
- to the meals.

Therefore, it allows to make a very realistic and specific visualization of the alcohol intake and of the theoretical B.A.C, base of a specific educational and interactive use.

THE STUDIES REALIZED

Two studies have been led to evaluate the impact of the B.A.C simulator.

The study A: concerned employees of RATP (Paris Underground) and of SNCF (the French railways company).

The study B: concerned French army servicemen (draftee or enlisted).

STUDY A

It compared the knowledge of alcohol risk in three groups of subjects, groups composed with a random sharing out of the subjects.

Group I: this group is a group control receiving no information on alcohol risk.

Group II: this group receives a classical educational program and an individual training on B.A.C. simulator.

Group III: this group receives a classical educational program and an individual training on B.A.C. simulator.

METHOD OF EVALUATION

After the educational period, the three groups filled a questionnaire concerning:

- their self characteristics (age, weight, height, sex), family and occupational situation,
- knowledge on alcohol risk,
- consumption of alcohol,
- general environment,
- occupational environment.

ETHICAL ASPECTS

Confidentiality of the answers was guaranteed by their anonymity.

The acceptance by the subjects was obtained previously to the study.
RESULTS

The results concern 351 questionnaires divided in:

- 97 in group I
- 149 in group II
- 95 in group III

Knowledge on Blood Alcohol Limit in Traffic Safety

This level is known in:

- 65.98% of group I subjects
- 81.76% of group II subjects
- 82.11% of group III subjects.

This correct knowledge, equivalent in group II and III shows an equivalence of the two campaigns, for this simple item.

Evaluation of the Time to Reach Back 0.8 g/l (BAL in France)

<table>
<thead>
<tr>
<th>Group</th>
<th>Optimistic Answer</th>
<th>Pessimistic Answer</th>
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</thead>
<tbody>
<tr>
<td>Group I</td>
<td>8.25%</td>
<td>48.45%</td>
</tr>
<tr>
<td>Group II</td>
<td>9.43%</td>
<td>53.46%</td>
</tr>
<tr>
<td>Group III</td>
<td>2.11%</td>
<td>60.00%</td>
</tr>
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This appraisal shows, paradoxically, a gliding of the subjects toward pessimistic values, more clearly in the group III than in the group II. This evolution is one of the educational aims researched.

Evaluation of the Time Limit Before Being Able to Work

<table>
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<tr>
<th>Group</th>
<th>Optimistic Answer</th>
<th>Pessimistic Answer</th>
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<tbody>
<tr>
<td>Group I</td>
<td>9.28%</td>
<td>39.18%</td>
</tr>
<tr>
<td>Group II</td>
<td>14.47%</td>
<td>37.11%</td>
</tr>
<tr>
<td>Group III</td>
<td>7.37%</td>
<td>43.16%</td>
</tr>
</tbody>
</table>

This appraisal shows a gliding to a lightly more optimistic appraisal in the group II and lightly more pessimistic in the group III. The effect on the group III is also one of the researched educational actions.
Evaluation of the Time Limit to Reach a B.A.L. 0.0 g/l (BAL in France)

<table>
<thead>
<tr>
<th></th>
<th>right answer</th>
<th>optimistic answer</th>
<th>pessimistic answer</th>
</tr>
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<tbody>
<tr>
<td>group I</td>
<td>10.31%</td>
<td>52.58%</td>
<td>23.71%</td>
</tr>
<tr>
<td>group II</td>
<td>8.18%</td>
<td>46.54%</td>
<td>26.42%</td>
</tr>
<tr>
<td>group III</td>
<td>18.95%</td>
<td>23.16%</td>
<td>38.95%</td>
</tr>
</tbody>
</table>

The group III shows a better knowledge of this parameter with a persistency to a pessimistic appraisal.

Judgment Concerning the Justification of B.A. Controls

The B.A. controls at work seems to be better accepted in the group III (74.74%) than in the group II (64.78%) or in the group I (67.01%).

The dedramatizing and interactive aspect of the BAC simulator probably influence this evolution.

Control of Relationship with Alcohol

The certainty of the subject concerning their self control of the alcohol risk is not weakened by the different educational action. This commonly held opinion stays an important problem in traffic safety.

The Role of the Firm in Employees Health

This role is estimated as normal by the most part of the subjects of the three groups without significant difference between them.

DISCUSSION

The evaluation of those results allows to notice different points:

- the study of the questionnaires filled in by the subjects of the group I (without any educational program on alcohol risk) shows some previously known notions.
- A rather good knowledge of the B.A. limit in traffic safety.
- A pessimistic tendency in the appraisal of the B.A. curves (but concerning subjects employees in public transport firms).
- An optimistic tendency in the appraisal of the time limit to reach back 0.0 g/l.

The study of the questionnaires filled in by the subjects of the group III (after B.A.C. simulator training) shows a decreasing of optimistic appraisals and an increasing of pessimistic appraisal for reaching back 0.8 g/l with better knowledge of the late evolution of BAC and the return to zero BAC.
CONCLUSIONS

The knowledge of alcohol risk in the population still appears rather weak especially concerning specific aspects for each subject.

A first appraisal of the impact of an educational program with B.A.C. simulator shows an evolution toward a more pessimistic appraisal of those specific aspects, and a better acceptance of the interference of a third party in the relationship subject-alcohol.

STUDY B

It was realized in 15 military places (waiting room of medical services, military schools, library). In each place, a B.A.C. simulator was set up and an information given to the observers.

POPULATION TESTED

793 subjects have been tested in the 15 places selected.
The population included draftees, enlisted, executives, officers, officer cadets.
The sessions were based upon a spontaneous demand.

METHODS OF EVALUATION

An individual questionnary was filled in by each user after the session, concerning:
• the reason of the use (curiosity, awareness, personal interest, educational aim);
• the duration of use (less than 5 min, 5 min, 5 to 10 min, over ten min);
• the frequency of use (once, twice, three times, more than three times).

RESULTS

Duration of the use (618 answers):
• less than 5’ 173
• 5’ 148
• 5’-10’ 256
• over 10’ 41

Interest of the educational informations (670 answers):
• no interest 34
• rather well 161
• well 256
• very well 219
Interest of BAC curves (660 answers):
• no interest 14
• rather well 97
• well 282
• very well 267

Motivation of the use (585 answer):
• curiosity 364
• awareness 80
• personal interest 46
• educational aim 95

Frequency of use (602 answer):
• once 448
• twice 101
• three time 16
• over three 37

COMMENTS

After a free use, spontaneous and intentional, it appears that:
• an important part of the subjects initialy use the B.A.C. simulator by curiosity, but that
  the duration of use is over than 5’ for more than 50% of them.
• The informations delivered by the system are appraised as interesting or very
  interesting by more than 80% of the subjects.
• A B.A.C. simulator appears like a usefull method to introduce an interactive dialogue on
  alcohol risk.
• The use of the BAC simulator appears as positive to introduce a dialogue between the
  individual and the educational program leader.

Its use seems to be more usefull as a base of this dialogue than a knowledge distributor.

Most of the users conclude to the necessity of the presence of a leader in the aim of a better
management of the use and to pass over a simple play activity.

It’s main interest lies in its technical characteristics which allow a personalization of the
datas and of the resulting curves in a impartial way. This personalization also allows,
with its fictitious aspect, to pass over the initial reluctance of the individuals to touch on
the problem of alcohol, and to initialize an educational approach adapted to the places of
life of the people.
REFERENCES

Intérêt d’un dispositif de simulation d’alcoolémie chez des employés d’entreprises de transports collectifs.