

## KNOWLEDGE ABOUT SMOKING AMONG SCHOOLCHILDREN

Alberto De Vitta<sup>1</sup>, Daniela Tomazini da Silva<sup>2</sup>, Fabiana Cristina Frigieri De Vitta<sup>3</sup>,  
Marta Helena Souza de Conti<sup>4</sup>, Leila Maria Vieira<sup>5</sup>, Sara Nader Marta<sup>6</sup>,  
Márcia Aparecida Nuevo Gatti<sup>7</sup>, Sandra Fiorelli de Almeida Penteado Simeão<sup>8</sup>

### Abstract

The objective was to verify the changes of relative theoretical knowledge to the tobacco, evaluated at two moments (pre and post-tests) considering two educative interventions: expositive lesson and educative games. 68 pupils had been citizens, of both the sexes, three 5th grades of a public school, evaluated previously (A1) on tobacco; group 1 was submitted to a procedure of expositive education, the 2 educative games in the 2 e, the 3 to no intervention. After one week they had been reevaluated (A2). For the moments the test of Wilcoxon was applied and between the groups Kruskal Wallis. As results noticed that, at the moments, it had significant differences between 2 groups 1 and e, between the groups, in the after-test, the submitted one to the educative games presented performance with statistical significant result better. This research concluded that the educational game increased in the students' knowledge about smoking.

**key words:** smoking; students; health education.

### INTRODUCTION

Tobacco use by humans has increased in recent decades and it is considered pandemic for causing the death of approximately 7.9 million people every year<sup>1</sup>. It is estimated that approximately 80% of the emphysema and lung cancer cases, 75% of the chronic bronchitis and 25% of the acute myocardial infarctions, result from tobacco use. In Turkey, the prevalence of smoking among elementary school students who have tried tobacco at least once in their lifetime was 16.1%, and 55.9% among high school students<sup>2</sup>.

In Brazil, prevalence of smokers over 15 years old, in the year of 1989, was 30%. Among students the prevalence rate among those who have tried cigarettes was 58% for males, in Fortaleza, and 36% for females, in Vitória. The highest percentage

was found in Porto Alegre (Rio Grande do Sul State) – 55% –, and the lowest was found in Curitiba – 31%. In schools, the percentage number of students who smoke regularly was proportionally higher in Porto Alegre (35.3 %), Goiânia (31.2 %), Campo Grande (26.78 %) and Palmas (26.5 %) <sup>3</sup>.

The intervention forms on tobacco control involve preventive actions in the workplace ("Prevention always"), in basic units ("Health and coherence") and in schools ("Knowing health"), by means of educational programs, with constant discussions about the adopted pedagogical practices<sup>4</sup>.

The educational game is one type of educational procedures. Education through this practice consists of a group educational methodology, aimed at promoting and facilitating learning. For the authors, group learning means

- 1 Alberto De Vitta, Professor Doutor do curso de Fisioterapia e do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil; e-mail: albvitta@yahoo.com.br
- 2 Daniela Tomazini da Silva, Graduada em Fisioterapia, Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil; daniela.tomazini@gmail.com
- 3 Fabiana Cristina Frigieri De Vitta, Professora Doutora do Curso de Terapia Ocupacional da Universidade Estadual Paulista, Av. Hygino Muzzi Filho, 737, CEP 17525-900; Marília, SP, Brasil, e-mail: fabianavitta@gmail.com.
- 4 Marta Helena Souza De Conti, Professora Doutora do Curso de Fisioterapia e do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Bauru, SP, Brasil. e-mail: madeconti@yahoo.com.br.
- 5 Leila Maria Vieira, Professora Doutora do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil, e-mail: leila.vieira@usc.br.
- 6 Sara Nader Marta, Professora Doutora do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil, e-mail: leila.vieira@usc.br.
- 7 Márcia Aparecida Nuevo Gatti, Professora Doutora do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil, e-mail: marciangatti@gmail.com.
- 8 Sandra Fiorelli de Almeida Penteado Simeão, Professora Doutora do Mestrado em Saúde Coletiva da Universidade do Sagrado Coração (USC), Rua Ir. Arminda, 10-50, Jd Brasil, CEP: 17011-160; Bauru, SP, Brasil, e-mail: ssimeao@usc.br.

Instituição de fomento: Fapesp

**Corresponding author:** albvitta@yahoo.com.br

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reading based on thought, feeling and action, intensifying the knowledge exchange and learning, in a way that the individual actively participates in the construction of new lifestyle habits<sup>5</sup>.

The game has proven to be an activity of good applicability in various situations, such as professional and users training of health services, schools, communities, enterprises, corporate bodies, among others. This type of educational tool has represented a ludic, creative and innovative alternative, by incorporating a certain critical view of education on health, which contributes to the construction of health knowledge<sup>6</sup>.

The ludic activity is a possible mediator for the teaching-learning process, and may be an alternative method to assist in it. Accordingly, it is clear that the ludic activity contemplates the criteria for an effective learning, as it draws attention to a particular subject (intentionality/reciprocity), its meaning may be discussed with all participants and the generated knowledge from this playful activity can be transposed to the field of reality, which characterizes the transcendence<sup>7</sup>.

In a study about the attitudes and intentions of 4<sup>th</sup> grade American students regarding the non-use of tobacco products, it was seen that the educational games program had improved their knowledge, when they were compared to the control group<sup>8</sup>.

Lectures are another type of educational procedure. The educational process through lectures, as it occur in traditional pedagogy (in which the teacher is the interlocutor – the party responsible for advising students and teaching the content, as the sole responsible for conducting the learning), has repercussions on the subject's behavior, both individually and collectively<sup>9</sup>.

In a longitudinal study, aimed at verifying the acquired knowledge through lectures, we noticed that knowledge was held for a few months after the program implementation<sup>10</sup>. An exhibition program for students showed knowledge increase about smoking and unhealthy habits<sup>12</sup>.

The relevance of studies about education and health of students complies with the National Curriculum Parameters (NCP)<sup>11</sup>, which, in the Health Action chapter, propose an integrative relationship between health and education, so the accumulated knowledge of these fields may help develop actions for disease prevention and strengthening of protective factors. The educational sectors are important allies when it comes to achieving health promotion actions aimed at the solidification of individuals' capacities to make decisions towards their health and their community's health, as well as the solidification of intersectional policies focused on quality of life.

The health education process promotes awareness of individuals about their rights to health and gives them tools for individual and collective intervention on the determinations of the health-disease process. In the past, school curriculums

presented minimal approach on health-related subjects. Only after the 1970s decade, after Law no. 5.692/71, a school subject called "Health Programs" was introduced with the basic goal of "giving the child and adolescent the development of healthy habits on personal hygiene, nutrition, sports practice, work and leisure, allowing their immediate use towards maintaining personal and public health"<sup>12</sup>. The approaches on health issues in schools present diseases as established facts, shortened to the pathologic process and its consequences, and fail to provide effective means of prevention that are close to the individuals' realities of various communities<sup>4</sup>.

Education is an essential element among the individual, their environment and the procedures that are used to carry out their responsibilities. It provides requirements for significant action on diverse risk factors. It highlights the importance of educational work on prevention itself, i.e. acting before problems (such as smoking) occur, even at minimal degrees<sup>13</sup>.

Thus, the objective of this study was to investigate the changes of theoretical knowledge about smoking, assessed in two moments (pre- and post-tests), considering two educational interventions (lectures and educational games) on 5<sup>th</sup> grade students from a public school in the city of Bauru. For this, we assumed that the students who underwent the educational program based on educational games presented superior performance when compared to the other group.

## METHODS

To conduct this study we used a quasi-experimental design – the dependent variable (criterion) was the theoretical knowledge related to smoking, and the independent variables were the educational procedures.

The subjects who were affected by the research are students enrolled in all five 5<sup>th</sup> grades of the Public Municipal Basic Education School "Santa Maria", in the city of Bauru. The population consisted of 150 students who underwent a random selection, so three classes were selected – a total of 68 students. Group 1 comprised 24 students; group 2 comprised 19 students and group 3 comprised 25 students. Six students were excluded from group 1, eleven were excluded from group 2 and five were excluded from group 3 for not having participated in 75% of the proposed activities or for being transferred.

The formation of the three study groups, also made by a random selection, occurred as follows: the educational procedure was applied through lectures on the first group; the second group received the educational procedure through educational games; the third group underwent the same initial questionnaire that was presented to the other groups, without any intervention – this

was considered the control group. Teachers were instructed not to interfere with concept presentations about the effects of smoking for the groups, during the period of execution of work.

We informed the school board about the project and they issued an authorization letter, through which parents of the students were instructed about all phases of the study, the voluntary nature of participation, the possibility of abandoning the research at any time and the right to confidentiality of individual data. Accepting that their children would participate in the project, parents signed the consent form. This form was previously approved by the Research Ethics Committee of the Universidade do Sagrado Coração (process no. 42/2006).

The procedures for operationalization of the proposed design followed the described steps in this order:

The initial assessment (A1) consisted of the application of a questionnaire on the three groups. This questionnaire comprised 14 questions with multiple choice alternatives, which included basic topics on anatomy, physiology, pathology, cigarette composition and risk factors. The questionnaire was evaluated by three experts regarding its objectivity, clarity and suitability for the proposed project.

Here are some examples of the questions found on the instrument. Example 1: Why is smoking considered a risk factor for myocardial infarction? a) because it reduces heartbeat causing less blood to reach the heart muscle; b) because smoking causes dilation of arteries, which reduces blood pressure inside arteries and promotes the accumulation of fatty plaques within vessels; c) because it increases blood pressure, heart rate, reduces the supply of oxygen to tissues and promotes the emergence of atherosclerosis; d) because it causes sudden cardiac arrest, accompanied by increased supply of oxygen to tissues; e) I don't know. (Correct answer: b). Example 2: Carbon monoxide is responsible for: a) causing cells poisoning and decreasing the transportation of oxygen by blood; b) causing cell poisoning and decreasing the risk of anemia; c) causing poisoning and increasing the transportation of oxygen by blood; d) causing poisoning and reducing the risk of cancer; e) I don't know. (Correct answer:

a) Questionnaires were applied by the researchers in individual sessions and collected from the respective classrooms on the same day.

One week after A1, the educational procedures were applied on group 1. The sixty minutes classes happened once a week, adding up four teaching units. The classes times and dates were discussed with the school principal and the teacher of each class, so the classes' routines would suffer minimal changes.

The lectures were divided into themes, as follows: a) The cigarette composition (solid and gaseous phase), main effects and diseases related

to smoking; b) Risk factors for starting smoking; c) Ways to prevent tobacco use; d) General review.

The games lasted 60 minutes, once a week (a total of four teaching units), and were applied only on group 2. For the accomplishment, students were subdivided into subgroups with approximately seven members – one of the students was assigned to be responsible for informing the answers to the coordinator.

Each meeting with the subgroups was performed as follows: a) Establishment of a friendly environment for discussion and creation of a horizontal relationship among the researcher and the students; b) Warm-up activity, motivating students to participate; c) Presentation of the proposed discussion for the theme, making material available and encouraging group work; d) Curriculum presentation through games, for each proposed theme; e) Systematization of the presented content, complemented with information related to the theme (such as posters, movies, etc.) to help the understanding; f) Summary of the discussed issues, allowing the rise of possible doubts whilst organizing the evaluation of that day's work<sup>4</sup>.

The addressed themes on the initial meeting were: "the cigarette composition (solid and gaseous phase)" and "main effects and diseases related to smoking", through a diagram of word search game, on individual sheets, one for each group. There were seven different types of diagrams. After finishing this phase, students, still gathered, had to expose their own diagram's constitution to the other groups. In the end there was a discussion about the subject.

On the second meeting, the theme was "risk factors for starting smoking", presented through a game of encrypted words. Students were divided into groups and had to translate the phrase, from symbols to Portuguese. Each group member received one sheet of paper with the activity on it. In the end, each group's representative member exhibited the answer found by the group to the coordinator, developing a debate on the subject.

On the third meeting a dynamic activity was held on the theme "ways to prevent tobacco use", through a crossword puzzle game. Students discussed the answers in groups and communicated them to the coordinator. In this game there was interaction among groups to obtain the answers. The coordinator worked with the groups, giving important guidance (about words' similarity, for example) so that students could get to the answers.

On the fourth meeting a question and answer activity was performed, regarding the content of previous classes, and a final debate was made.

One week after the end of the educational procedures a reassessment was made on the knowledge about smoking and its effects, by replicating questionnaire 1, following the same procedure of the initial evaluation.

We used Wilcoxon test for the moment analysis of the percentage of correct answers on the theoretical knowledge about smoking. The

Kruskal Wallis test was used for individual comparisons on pre- and post-tests, and also for the difference among groups. All statistical conclusions were discussed at 5% significance level<sup>14</sup>.

**RESULTS**

Table 1 shows the descriptive measurements of the correct answers frequency, before and after the training, according to each study group.

**Table 1:** Descriptive measurements of the number of student’s correct answers

Group	Descriptive	Assment moment		Moment test result
		Antes	Depois	
Lecture (G1)	Minimum Value	0,0	2	p<0,0001
	Median	3	4,0	
	Maximum Value	5	7,0	
Educational Games (G2)	Minimum Value	0	5,0	p<0,0001
	Median	2,0	6,0	
	Maximum Value	4	7,0	
Control (G3)	Minimum Value	0	0	p>0,05
	Median	3,0	2	
	Maximum Value	5	6	
Group test result		p>0,05	p<0,001	

By comparing the respective assessment moments (pre-test and post-test) of each group, we could verify that groups 1 and 2 showed statistically significant differences (p<0.0001), whilst these differences were not seen on group 3 (p>0.05).

When comparing groups, we can see that the group that was submitted to educational games showed better performance with statistically significant result on the post-test.

**DISCUSSION**

This study aimed to verify the changes on theoretical knowledge related to smoking, assessed at two moments (pre- and post-tests) considering two educational programs (lectures and educational games).

Comparing both groups at different moments, we noticed that both groups showed significant change on knowledge, which proves the effectiveness of educational interventions. By comparing the two groups, it is seen that the group that was submitted to games showed better performance, with statistically significant results.

Previous studies using educational games had shown that the procedure had increased the knowledge of students regarding smoking. Structured and interactive games were helpful to promote retention of the acquired knowledge. Students who were submitted to educational games showed higher level of acceptance and knowledge, when compared to those who had not been exposed

to the program<sup>15</sup>. The use of games encouraged the dialog among teenagers on an educational program about drugs. This shows that the ludic and interactive aspects favor the outbreak of a questioning cognitive process. It also provides reflection and knowledge acquisition, which constitutes the support and incentive to educational action<sup>16</sup>.

Educational games, from a structural point of view, are of great importance for knowledge production. The sense and the need for theory are formulated and set in context with the games. In a way, fantasies, mythifications, deforming ways of thinking or inventing reality are preludes to future theorizations. In short, games are a base for understanding “how” and “why” things are<sup>5</sup>.

The increased knowledge may be explained by the fact that the proposed activities (word hunt, cryptography and questions and answers) provide information, promote debates and exchange of experiences among participants, enlighten issues in a satisfactory way, stimulate the interest on particular topics and the breach for the discussion of myths and health risk attitudes<sup>16</sup>.

Moreover, another important point that promoted the increase of correct answers is that all activities enabled the interaction, the development of a group sense, the decision-making among participants, stimulating the interest on particular topics, permitting the construction of learning and the strengthening of knowledge, besides providing the outbreak of a questioning cognitive process, constituting a support and incentive for educative action. These factors make

activities more dynamic, pleasurable and the challenge constitutes an important point of particular interest<sup>6, 17</sup>.

This study allowed us to conclude that the educational game promoted the increase of students' knowledge about smoking. This type of educational procedure may offer significant contribution to learning, because it streamlines the teaching-learning process through the discussion it provides. Also, it is fundamental highlighting that, on the educational game, the learner is the active agent of their own instrument (in contrast to traditional pedagogy), making the procedure used here an interesting learning tool, as it proposes the stimulation of the learner's interest. Another important point is that the educational games were developed through simplified, crafted technology, with cheap and accessible manufacture.

The school must allow a broad and consistent view of Brazilian reality and its place in the world, besides developing an educational work which enables the social participation of students. We should abide by the organization of work on areas that surround themes such as health, and allow the development of contents to be processed in a regular and contextualized manner. The transversal processing of the theme is due to the fact that the approach happens on the everyday school experience, and not on the study of a school subject<sup>11, 18</sup>.

Today's school objective must be to provide knowledge that relates to people's everyday lives, providing effective development for different areas of life. Today, a reactive process is perceived amidst this reality, yet lacking collective political elaboration, conducted by school professionals – an incorporation process of a set of not typically educational responsibilities (but without which the work specifically targeted for schooling becomes unviable). There are activities related to hygiene, health, nutrition, primary care and habits. Furthermore, we see great affective dependency from a significant percentage of students who often have the school and the school professionals as their most stable reference in their life experience<sup>19</sup>. The author points that traditional Pedagogy is not capable of dealing with these necessities, and it is necessary to review the forms of teaching, by offering opportunities for the learning to be based on significant experience<sup>19</sup>.

In short, it is fundamental that the orientation towards health issues is begun early in life, with warnings on the dangers of bad habits and ways to prevent them on the everyday life. Health professionals should be aware of the importance of implementing prevention programs in schools. However, for effective results to be achieved, parallel actions must be promoted, in order to include not only children, but also parents and the rest of the community.

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