

How can we teach them about neurotrauma prevention? Prospective and randomized “Pense Bem – Caxias do Sul” study with multiple interventions on pre-teens and adolescents

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Introduction

Traumatic brain injury is the main of death and disability in Brazil.

A previous “Pense Bem” or “Think Well” study published by the authors showed that an educational intervention based on a single lecture improved students’ knowledge of prevention in traumatic brain and spinal cord injuries, but this type of intervention did not modify most attitudes toward injury prevention in teenaged students (1).

The goal of this study is to find out whether multiple interventions (MI) are able to modify attitudes in comparison to single intervention (SI) in students of different ages.

Methods

A controlled and randomized study was held in public and private schools in Caxias do Sul, a southern Brazilian city. Of the 33 schools, 6 were randomly selected and divided into the following 3 groups: 2 schools represented the control group (n = 140 students); 2 schools represented the SI group (n = 223 students); and 2 schools represented the MI group (n = 172 students). The sample consisted of students in the fifth year of primary school (PS) and second year of high school (HS). The time-line of the interventions are described as in figure 1.

Figure 1. Time-line of the interventions performed



T1: questionnaire
T2: lecture about trauma prevention
T3: questionnaire
T4: Traffic Department intervention
T5: Scene of a play about trauma and its consequences
T6: Regional Fire Department intervention
T7: Emergency Medical Service intervention
T8: questionnaire

Results

The questionnaire was completed by 535 students: 26.2% (n=140) in the control group; 41.7% (n=223) in the SI group; and 32.1% (n=172) in the MI group. Table 1 summarizes general characteristics of the sample. Seatbelt use was a protective behavior higher than 95% in both PS and HS students independent of the stage.

The use of safety equipment on bikes and equipment on skateboards and rollerblades was more common in PS than in HS students. The use of safety equipment on bikes and equipment on skateboards and rollerblades was more common in PS than in HS students.

An instrument was developed by the Neurology and Neurosurgery Multidisciplinary Academic League (LAMNN) of the University of Caxias do Sul based on the interventions made. Regarding the answers on attitudes concerning the use of seatbelt, safety equipment on bike/skateboard/rollerblade and motorcycle helmet, answers were considered positive when the student reported using safety equipment “always or sometimes”, and negative when they reported “never” using protection equipment.

In the control group, the questionnaire was applied in the same time period as the Si and MI groups, T1, T3 and T8, but with no intervention,. In the SI group, the students participated in the T1, T2, T3 and T8 stages and in the MI group, they participated in all stages. After the study was completed, the students in the control and SI group received all interventions.

Table 1. General characteristics of the sample

	Total (n=535)	Control (n = 140)	Single Intervention (n = 223)	Multiple Interventions (n=172)	p Value
Mean age PS (5 th grade)	11.38 (±0.70)	11.3 (±0.55)	11.26 (±0.71)	11.55(±0.72)	0.018 ^a
Mean age HS (2 nd grade)	17.35 (±0.69)	17.49 (±0.70)	17.15 (±0.54)	17.55 (±0.60)	<0.001 ^a
Female gender	54.0%	50.0%	52.0%	59.0%	0.246 ^b
Ride a car	96.0%	96.0%	96.0%	95.0%	0.206 ^b
Ride a motorcycle	32.0%	37.0%	22.0%	39.0%	0.002 ^b
Ride a bike	72.0%	73.0%	71.0%	73.0%	0.862 ^b
Ride a skateboard or/and rollerblade	34.0%	34.0%	36.0%	32.0%	0.719 ^b
Accident in the family	65.0%	61.0%	66.0%	67.0%	0.637 ^b
Accident itself	33.0%	29.0%	37.0%	32.0%	0.307 ^b
Death/ICU related to accident	25.0%	29.0%	24.0%	21.0%	0.260 ^b

PS- Primary School; HS- High School * ANOVA; ^a X² test; ICU, intensive care unit;

Table 2. Reasons for not using individual protection devices.

Reasons	Control (%)			SI Group (%)			MI Group (%)			P ²
	T1	T8	P ¹	T1	T8	P ¹	T1	T8	P ¹	
Expensive	50.0	36.7	0.13	24.7	28.8	0.39	34.5	43.5	0.11	0.001
Being ashamed	49.3	47.5	0.75	36.8	55.0	<0.001	42.1	47.1	0.41	0.21
Laziness	59.3	67.9	0.17	70.4	55.0	0.001	55.6	66.1	0.06	0.54
Feeling uncomfortable)	52.1	51.4	1.0	56.1	51.6	0.39	49.4	52.6	0.62	0.80
Not required by law	47.5	43.2	0.59	51.1	51.1	1.0	51.2	60.0	0.12	0.72
Believe that will not get hurt	79.3	84.3	0.35	80.7	83.8	0.46	72.9	79.0	0.23	0.38

P¹: McNemar test performed to access the intergroup difference between T1 and T3; P²: X² test in T7

The answers concerning the use of equipment on bike/skateboard/rollerblade were usually negative independent of the age of the student and the type of intervention performed, mainly in PS.

There was no difference in attitudes regarding the use of a motorcycle helmet because more than 93%, had a positive answer in both students from PS or HS independent of whether there was an intervention or not.

The reason for not using personal protection equipment during physical activity (skate/rollerblade/bike) and riding motorcycle/driving cars was mainly the belief that they would not get hurt, followed by laziness to use the protection devices and feeling ashamed at the increased frequency. Feeling ashamed and laziness were more relevant in adolescents (HS students) than in pre-teens (PS students) in any group or stage (Table 2).

Conclusion

Multiple educational interventions taking several social groups together and addressed to 5th grade PS young teen and 2nd year HS teenagers from public and private schools did not modify most attitudes towards injury prevention.

We think that these interventions should be performed not only on the students but also on their family in order to have a better chance of modifying attitudes toward injury prevention.

References

- Falavigna, A, et al. Impact of an injury prevention program on teenagers' knowledge and attitudes: results of the Pense Bem Caxias do Sul Project. Journal of Neurosurgery. Pediatrics 9:562-8, 2012.