Effectiveness of the P.A.R.T.Y. (Prevent Alcohol and Risk-Related Trauma in Youth) Program in Preventing Traumatic Injuries: A 10-Year Analysis

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Background: The P.A.R.T.Y. (Prevent Alcohol and Risk-Related Trauma in Youth) program is a 1-day injury awareness and prevention program for youth aged 15 years and older. The goal is to teach adolescents to recognize their injury risks and make informed decisions to reduce them. This study assessed the effectiveness of the P.A.R.T.Y. Program in preventing traumatic injuries during a period of 10 years (1992–2004).

Methods: P.A.R.T.Y. participants (STUDY) were matched with subjects having the same age, gender, residential area, and initial year in database, who did not attend the P.A.R.T.Y. Program (CONTROL). Data from hospital discharge database, and provincial health claims, were searched to determine the incidence of traumatic injuries in both groups. Statistical comparisons were made for the two groups, gender, calendar year, and before and after the graduating driver licensing system was implemented, using the $\chi^2$ and conditional logistic regression analysis with a $p < 0.05$ considered significant.

Results: Of 3,905 P.A.R.T.Y. participants, 1,281 were successfully randomly matched on the above 4 variables with 1,281 controls. The most frequent injury was injury by other or homicide 373 of 2,562 (14.8%). There were fewer traumatic injuries in the STUDY group than in the CONTROL group (43.3% vs. 47.4%; $p = 0.02$; OR, 1.22; 95% CI, 1.03–1.45). This difference was stronger in females (44.4% vs. 49.0%; $p = 0.04$) and before and after the graduating driver licensing system implementation (60.1% vs. 67.2%; $p = 0.04$).

Conclusions: The P.A.R.T.Y. Program effectively reduced the incidence of traumatic injuries among its participants. This effectiveness was stronger among females and before the driver licensing system was implemented.

Key Words: P.A.R.T.Y. Program, Prevention, Traumatic injuries, Effectiveness, Youth.

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Greater Toronto Area and the municipalities that comprise southern Ontario’s “Golden Horseshoe” may choose the students who attend, may bring an entire class or open the opportunity up to the student body to self-select. In some instances, the P.A.R.T.Y. Program has worked directly with probation centers and alternative schools to provide opportunities to “at-risk” youth to attend P.A.R.T.Y. Program. Students follow the course of injury from occurrence through transport, treatment, rehabilitation, and community reintegration. They interact with a team of health care professionals and members of the emergency medical system that includes a paramedic, a police officer, nurses, a physician, and a social worker. The students are given information about the following: basic anatomy and physiology; the mechanics of injury; the effect that alcohol and drugs have on decision making; risk assessment; concentration and coordination; the nature of injuries that can be repaired and those that cannot; and the effect of injury on families, finances, and future plans.

Participants begin to see the role their choices play in affecting their independence or risk of injury. The facilitator helps students to understand that risk is a part of everyday life and it is how they manage risk through the choices they make that can determine their continued independence or injury. The facilitator continues to emphasize that each lived experience combined with education or training that ultimately prepares them to make informed choices before they proceed to a decision. In delivering this message, the facilitator makes the strong recommendation that students take an extra 30 seconds before making a critical decision.

Encouraging students to take an extra 30 seconds to consider their options is vital because their brain development is not yet at a point of full maturation. The human brain develops in stages. The part of the brain (prefrontal cortex) that controls emotions is responsible for impulse control, judgment, decision making, planning, and organization and does not reach full maturity until around the age of 25 years.7

As students progress through the program, they are introduced to various elements of injury management and stages of recovery. The P.A.R.T.Y. Program team includes people who have been injured; some are still in acute care, some others in rehabilitation, and some have returned home. The injury survivors provide a personal perspective on injury, going through rehabilitation and treatment, and the challenge of living with injury—in a sense “putting one’s life back on track.” The P.A.R.T.Y. Program intends to influence the behavior of youth by creating a vivid clinical reality of injury that is processed and stored cognitively and emotionally by the participants.

The program concludes with a challenge to the participants to become individually and collectively committed to promoting behaviors and activities that minimize the risk of injury. Students are presented with a “Contract for Life,” which is signed between people who care about each other such as a teenager and a parent, guardian, or trusted adult. Finally, students are provided with a list of activities, which they can do after the program to encourage an ongoing dialogue within their family, school, or community (Table 1).

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<th>TABLE 1. Sample of Follow-Up Activities for Students After P.A.R.T.Y. Program Attendance</th>
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<tr>
<td>1. Create a commercial to express your concern about head and spinal cord injuries and share it with your local cable company.</td>
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<tr>
<td>2. Write and produce a play in which a character sustains and lives with a head and/or spinal cord injury. Video tape your play and share it with other schools.</td>
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<td>3. Write a letter to the provincial and federal ministers of health declaring your intention as a group to do something about death and injury because of risk behaviors.</td>
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<tr>
<td>4. Watch a television show or commercial and list the risk activities and the outcome portrayed.</td>
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<tr>
<td>5. Rent a wheelchair for a week and experience the reality of access and independence.</td>
</tr>
<tr>
<td>6. Invite a speaker from the Head Injury Association (or similar) to speak in your school.</td>
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Students complete hand-written evaluations not more than 1-week after participation in which they provide their comments on the experience of the P.A.R.T.Y. Program. The sample of comments provided by students is given in Table 2.

**Study Objective**

The objective of this 10-year longitudinal study (1993–2002) was to determine whether students who attended the P.A.R.T.Y. Program had a reduction in injuries when compared with a match-control group of students based on age, gender, and geographic area who did not attend the program.

**METHODS**

After approval by the Research Ethics Board of the Sunnybrook Health Sciences Centre, a retrospective review of electronic data from the Ontario hospital discharge database (Canadian Institute of Health Information) and the provincial health claims (Ontario Health Insurance Plan) was...
performed to determine the incidence of traumatic injuries in adolescents (age, 15–19 years) between 1992 and 2004.

P.A.R.T.Y. Program participants (STUDY) were matched with a group of subjects having the same age, gender, residential area (postal code first 3 digits), and initial year in database, who did not attend the P.A.R.T.Y. Program (CONTROL). Statistical comparisons were made for the two groups by gender, calendar year, and before and after the graduated driver licensing system was implemented in Ontario (April 1, 1994), using the $\chi^2$ and conditional logistic regression analysis with a $p < 0.05$ considered significant.

**RESULTS**

Of the 3,905 P.A.R.T.Y. Program participants, there were 1,281 pairs successfully randomly matched on the above 4 variables with 1,281 controls. Of these pairs, there were 317 pairs in which both members of the pair had an event (trauma) and 436 pairs where both members of the pair did not have an event. The remaining 528 pairs were the ones in which a member of one group had an event and the other did not.

**Incidence of Traumatic Injuries**

There were fewer traumatic injuries in the STUDY group than in the CONTROL group (43.3% vs. 47.4%; $p = 0.02$; OR, 1.218; 95% CI, 1.027–1.446). This result indicates that those in the CONTROL group were at a 21.8% greater risk of a traumatic event than those in the STUDY group.

**Time to First Traumatic Injury**

The average time to first event was measured from the time of attending the P.A.R.T.Y. Program to the time of an event (trauma) and 436 pairs where both members of the pair had an event (898 days) than their CONTROL counterparts (727 days). In the categories of injury where the STUDY group rated higher than the CONTROL group, the injury diagnosis was less severe (wound, fractures, synovium/tendon/bursa, and dislocation).

**Traumatic Injury by Gender**

Of the 1,580 females in the study (790 pairs), there were more traumatic injuries in the CONTROL group (n = 387, 49%) than in the STUDY group (n = 351, 44.4%), and this difference was statistically significant ($p = 0.04$). Of the 982 males in the study (491 pairs), there were more traumatic injuries in the CONTROL group (n = 220, 44.8%) than in the STUDY group (n = 204, 41.6%), and this difference was statistically significant ($p = 0.04$). Females had a greater reduction in traumatic injuries compared with males (36 vs. 16, $p = 0.04$).

**DISCUSSION**

This study shows that P.A.R.T.Y. Program participants had lower incidence of traumatic injuries than a control group of non-P.A.R.T.Y. Program participants of the same age, gender, residential area, and initial year in database, during the 10-year study. The P.A.R.T.Y. Program reduced the incidence of traumatic injuries in general, but the reduction was significantly greater among females (n = 36, 4.9%) than in males (n = 16, 3.8%). These findings are consistent with Economic Burden of Injury in Canada (2009) data that demonstrate a higher rate of injury for males aged 15 years to 19 years compared with their female counterparts in the injury categories of transport (42%), suicide (40%), violence (33%), and falls (18%).

This study shows the effectiveness of the P.A.R.T.Y. Program in reducing the incidence of traumatic injuries. This study also confirms the increased modification of the risk behavior of its participants, in this case, P.A.R.T.Y. Program and non-P.A.R.T.Y. Program participants.

There were no deaths among youth caused by traumatic injury in this study. The P.A.R.T.Y. Program did not reduce all traumatic injuries but helped its participants to remain free from injury longer than the CONTROL group (898 days vs. 436 days, $p < 0.0001$). This represents a change in behavior among those participating in the P.A.R.T.Y. Program. Furthermore, the injury severity to those P.A.R.T.Y. Program participants was significantly lower than the CONTROL group. It will be necessary to review the curriculum of the P.A.R.T.Y. Program annually in concert with an external scan of youth injury trends and other inputs to determine and implement modifications.

**Limitations**

The limitations of this study are related to the retrospective use of two different electronic databases to obtain the data used for comparison between the two subject groups. The hospital discharge database has data related to the demographic characteristics, diagnoses, complications, and outcomes of patients discharged from hospitals. The provincial health claims has the demographic characteristics and the reason for claims submitted by physicians because of the diagnostic or therapeutic procedures provided to people cov...
erated by the provincial health insurance system. Other limitation of this study was the change, during the 10-year period of this study, in the coding system version (International Classification of Diseases-ninth revision [ICD-9] to ICD-10) used for diagnosis of injuries and therapeutic activities performed by the treating physician. Despite having equivalent codes between ICD-9 and ICD-10, the version code change made it difficult to categorize the main diagnosis of the traumatic injury.

CONCLUSION

In conclusion, this study demonstrates the effectiveness of a hospital-based program in reducing traumatic injuries. The P.A.R.T.Y. Program effectively reduced the incidence of traumatic injuries among its youth participants. This effectiveness was stronger among females than males. Finally, vivid clinical reality, as an alternate method of education, may be more compelling than standard classroom education; however, further study or investigation is recommended.

REFERENCES


EDITORIAL COMMENT

Over the past 100 years, we have made huge strides in trauma care. We have improved our prehospital care, emergency room care, operative management, and intensive care unit care. Mortality and morbidity from trauma and burns have dropped significantly over the past 50 years to 60 years. We have had our greatest impact on survival in the prevention arena. Industrial disasters are relatively rare because of work place safety. Patients not only survive previously fatal automobile crashes but some patients also come out of the ordeal without a scratch because of seat belts, safety glass, air bags, and crumple zones.

The current article digs into this rich history of prevention. The authors ask the question how can we reduce teenage morbidity and mortality? The Canadian P.A.R.T.Y. (Prevent Alcohol and Risk-Related Trauma in Youth) program is patterned after the ThinkFirst! program here in the United States. It is clear that teenagers die and are injured for many preventable reasons.

Sunnybrook Health Sciences Centre offered P.A.R.T.Y. twice weekly where students can voluntarily sign up and take part in this program. Simply put this program encourages students “to take an extra 30 seconds” to think. Almost 4,000 students were enrolled in this program over a 12-year period. Students who participated in this program were compared with a control group. The control group had significantly more injuries and those injuries were more severe than those in the study group.

As with all good articles, this article raises as many questions as it answers. Although P.A.R.T.Y. decreases traumatic injuries, in the study group, did it decrease alcohol consumption? If it did decrease alcohol consumption, did it decrease the usage of other drugs like marijuana and cocaine? How long does the effect last? One of the biggest problems with several of the teenage trauma prevention programs that were developed in the 1970s (like Scared Straight) was that the modified behavior only lasted a relatively short time. Somehow, we need programs that will help teenagers throughout all of their at-risk years (age, 15–25 years). Does the program need to be repeated every 12 months to 18 months? Would another program, P.A.R.T.Y. II, if you will, be more effective than simply repeating P.A.R.T.Y.?

I commend the authors on this article. I look forward to more work from this Canadian group. Here in the United States, trauma prevention seems to be fragmented. There are several trauma centers, national groups and even regional groups, who are trying to tackle the problem of teenage injuries. There seems to be no momentum toward a single program or national standard. One of the reasons for this national stagnation is a lack of funding. Federal, state, and local funding is inadequate. Moreover, many trauma surgeons are overwhelmed with their clinical responsibilities and have little or no time for outreach programs. More funding will help us hire additional trauma surgeons, trauma nurses, and other interested professionals so that we can institute programs such as P.A.R.T.Y. and ThinkFirst! in our own institutions.

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REFERENCES