

Evaluation of a school-based injury prevention intervention in Beijing, China

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Abstract

This study examines the effectiveness of a school-based intervention program targeting adolescents in Beijing. A total of 2,759 students were randomly assigned in both experimental and control groups in Chaoyang District of Beijing. Compared to control group, the intervention group reported higher rates of increase in knowledge of traffic signs (12.2% increases vs. 1.9% decreases), knowledge of Traffic Law (21.12% increases vs. 10.98% decrease) and decrease in unsafe behaviors (18.78% decreases vs. 11.06% decrease). The study demonstrates the effectiveness of a school-based injury prevention program.

Research Objectives

- Evaluate the effectiveness of school-based health promotion programs among adolescents in Beijing.
- Understand how to conduct school-based interventions to prevent the traffic-related injuries among adolescents.
- Explore culturally appropriate injury prevention interventions for adolescents in China.

Background

- Traffic accident is the leading cause of death in China with 73,484 people being killed in year 2008.
- Traffic-related injury and death are also major public health concerns for adolescents.
- Few interventions have been conducted to increase knowledge of traffic safety and reduce unsafe behaviors, particularly among adolescents. Evaluation of such studies is further scarce.
- This study evaluated the effectiveness of a school-based injury prevention intervention in Beijing, China.

Methods

- Research site: Chaoyang District, Beijing, China.
- Participants: four pairs of schools were randomly selected from Chaoyang District in Beijing.
- For this study A total of 2,759 students at the 6-month intervention from both the intervention group and control group.
- Every 400 students per school were randomly selected, for both baseline and follow-up tests (2,759 out of 3,200).
- The social-demographic characteristics and key indicator measures (e.g., knowledge of traffic signs) did not differ between the intervention and control groups at baseline.
- Survey: self-administered, anonymous.
- All measures were administrated in both experiment and control groups. A self-administrated questionnaire was designed by the Institute of Health Education of Beijing CDC was adopted in this study as measurement.

Implications

- School-based multi-component injury prevention programs could help adolescents prevent traffic injury and reduce road traffic accidents in China.
- In order to improve traffic environment in China, intervention programs that aim to reduce road traffic accidents among adolescents should take behavioral, environmental, policy factors into consideration.

Limitations

- Due to this study only collected baseline and immediate follow-up data, the analysis were limited to assess the long-term or even life-long effects after the intervention.
- No survey designed for collecting teachers and parents' response to this program may limit the improvement for future prevention programs.
- The participants were recruited from schools in a fast-developed district in a big metropolitan city, generalization of findings to other places within China is limited.

Results

Table1. Demographic Characteristics and key indicators at baseline

| | Intervention Group | | Control group | | P-value ^a | Total | |
|---|--------------------|-----------|---------------|-----------|----------------------|-------|------|
| | N | % | N | % | | N | % |
| Total | 1565 | 56.72 | 1194 | 43.28 | | 2759 | |
| Grade | | | | | 0.038 | | |
| Middle School | 812 | 58.67 | 572 | 41.33 | | 1384 | |
| High School | 753 | 54.76 | 622 | 45.24 | | 1375 | |
| Gender | | | | | 0.001 | | |
| Male | 732 | 46.8 | 633 | 53.0 | | 1365 | 49.5 |
| Female | 833 | 53.2 | 561 | 47.0 | | 1394 | 50.5 |
| Commuting methods | | | | | 0.000 | | |
| Walking | 343 | 21.9 | 192 | 16.1 | | 535 | 19.4 |
| By bike | 513 | 32.8 | 490 | 41 | | 1003 | 36.4 |
| Public transportation | 584 | 37.3 | 470 | 39.4 | | 1054 | 38.2 |
| Private vehicles | 113 | 7.2 | 36 | 3 | | 149 | 5.4 |
| Others | 12 | 0.8 | 6 | 0.5 | | 18 | 0.7 |
| Time for commuting | | | | | 0.025 | | |
| <0.5h | 783 | 50.0 | 667 | 55.9 | | 1450 | 52.6 |
| 0.5-1h | 525 | 33.5 | 330 | 27.6 | | 855 | 31.0 |
| 1-1.5h | 172 | 11.0 | 136 | 11.4 | | 308 | 11.2 |
| 1.5-2h | 46 | 2.9 | 37 | 3.1 | | 83 | 3.0 |
| >2h | 37 | 2.4 | 23 | 1.9 | | 60 | 2.2 |
| Heard of Traffic-Law (%) | | | | | 0.000 | | |
| Yes, heard of | 1344 | 85.9 | 945 | 79.1 | | 2289 | 83.0 |
| No, never heard of | 221 | 14.1 | 249 | 20.9 | | 470 | 17.0 |
| Education on the Law in school (%) | | | | | 0.000 | | |
| Yes, it is | 1211 | 77.4 | 708 | 59.3 | | 1919 | 69.6 |
| No, never had | 347 | 22.2 | 484 | 40.5 | | 831 | 30.1 |
| Willingness to learn the Law (%) | | | | | 0.213 | | |
| Yes, has will to learn | 1410 | 90.1 | 1078 | 90.3 | | 2488 | 90.2 |
| No, no will to learn | 133 | 8.5 | 90 | 7.5 | | 223 | 8.1 |
| | | | | | | | |
| Knowledge of Traffic sign | | | | | | | |
| | Mean | SD | Mean | SD | | | |
| Total | 2.87 ^b | 1.010 | 2.610 | 1.064 | | | |
| Middle school | 2.84 ^b | 1.010 | 2.31 | 1.088 | | | |
| High School | 2.89 | 1.010 | 2.82 | 0.995 | | | |
| Knowledge of Traffic Law | | | | | | | |
| Total | 7.48 ^b | 3.666 | 7.92 | 3.541 | | | |
| Middle school | 7.43 ^b | 3.70 | 6.51 | 3.741 | | | |
| High School | 7.53 ^b | 3.633 | 8.92 | 3.020 | | | |
| Unsafe Behaviors | | | | | | | |
| Total | 2.130 | 2.717 | 2.260 | 2.594 | | | |
| Middle school | 2.13 | 2.649 | 2.30 | 2.512 | | | |
| High School | 2.14 | 2.791 | 2.23 | 2.653 | | | |

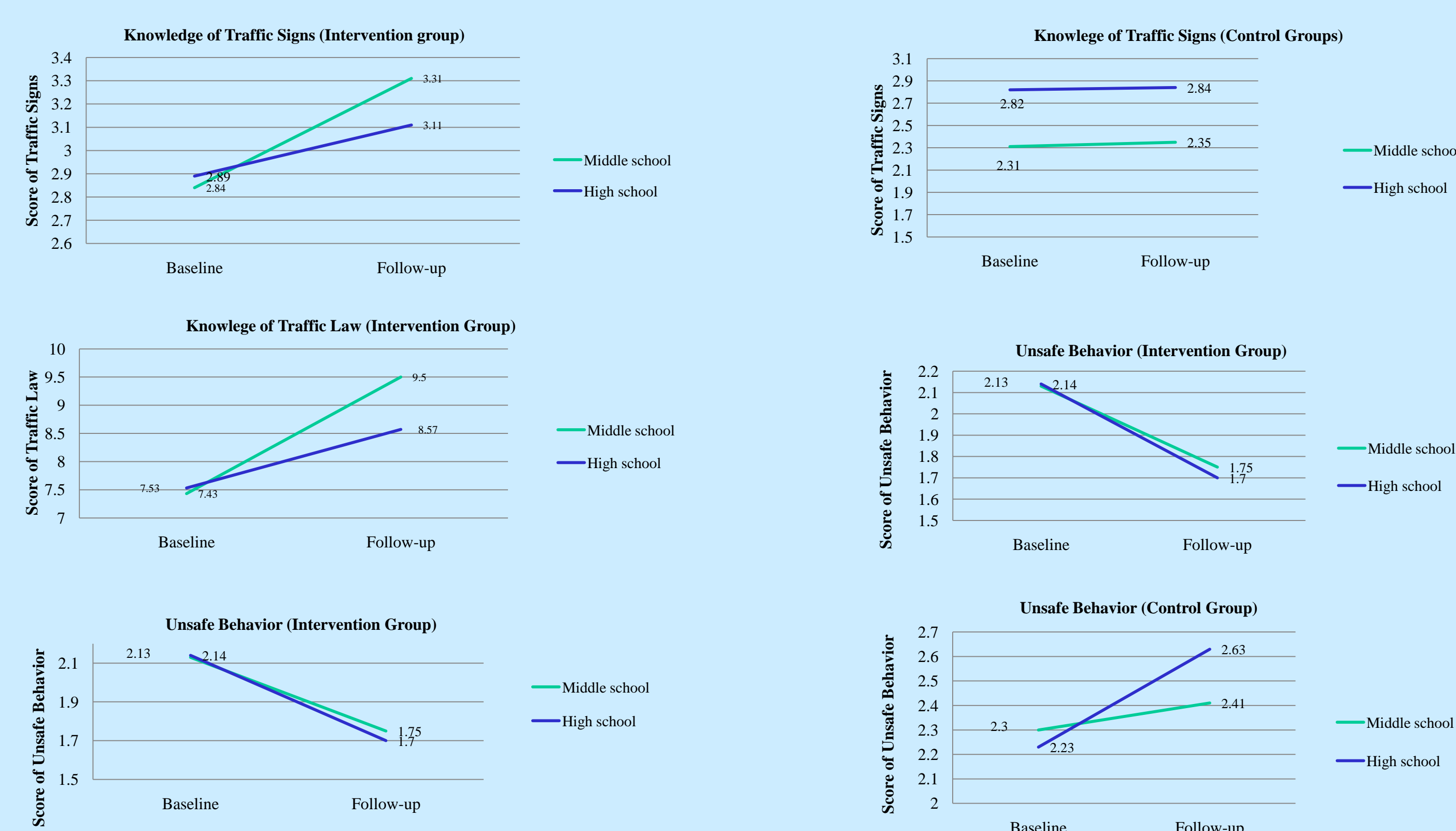
^a Chi-square p-value, intervention vs. control group; ^b p<.005 T-test p-value, baseline vs. follow-up

Table2. Comparison intervention and control group by Chi-square and t-test

| | | Intervention group | | | Control group | | |
|-----------------------------------|--------|--------------------|-----------|------------|--------------------|-----------|------------|
| | | Baseline | Follow-up | Difference | Baseline | Follow-up | Difference |
| Accident happened last year | (%) | 13.7 ^a | 15.3 | 1.6 | 17.10 ^a | 15.10 | -2.0 |
| Injury happen during the accident | (%) | 34.60 | 33.10 | -1.5 | 39.50 | 50.70 | 11.2 |
| Knowledge of Traffic sign | Median | 2.87 ^b | 3.22 | 0.35 | 2.61 | 2.56 | -0.05 |
| | SD | 1.010 | 0.937 | -0.073 | 1.064 | 1.057 | -0.007 |
| Knowledge of Traffic Law | Median | 7.48 ^b | 9.06 | 1.58 | 7.92 ^b | 7.05 | -0.87 |
| | SD | 3.666 | 3.420 | -0.246 | 3.541 | 3.835 | 0.294 |
| Unsafe behavior | Median | 2.13 ^b | 1.73 | -0.4 | 2.26 | 2.51 | 0.25 |
| | SD | 2.717 | 2.382 | -0.335 | 2.594 | 2.816 | 0.222 |

^a P<.005, Chi-square p-value, baseline vs. follow-up; ^b p<.005 T-test p-value, baseline vs. follow-up

Figure 1: Main indicators for Intervention Effectiveness



Conclusions

- The study demonstrates the effectiveness of a school-based injury prevention program.
- The program has been implemented into other schools in Beijing.
- More studies are needed to explore culturally appropriate injury prevention interventions for adolescents in China.

