Digital Road Safety Education Intervention for Children: A Pilot Feasibility Study

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Background

Active School Travel (AST): any human-powered method of commuting to and from school (i.e., walking, biking, skateboarding, etc.) that has been shown to increase children's physical and mental wellbeing.[3]

School Travel Planning: A community-based initiative that focuses on implementing active school travel (AST) and addressing the barriers associated with travelling to and from school).[5]

Introduction

One of the leading causes of youth mortality worldwide is road collisions, which accounts for 35-40% of injury-related mortality among youth in western countries.[1] Human behaviour has been determined to be the predominant cause for road accidents, thereby, highlighting the importance of road safety education (RSE) among children.[1] RSE is an important component of the STP initiative as it uses the "education" and "encouragement" aspect of the "five E's" of STP to help children gain the skills, confidence, and awareness to actively travel to and from school.[5] According to Assailly (2017), the three objectives of an RSE program are: "promotion of knowledge and understanding of traffic rules and situations, improvement of skills through training and experience, and strengthening and/or changing attitudes towards risk awareness, personal safety and safety of other road users". A study that examined the impact of digital media-based health on physical activity found that the educational program significantly increased knowledge and attitudes which are prerequisites for behaviour change.[4] Therefore, by implementing an RSE curriculum for students between the ages of 9 and 13 years, it is hypothesized that there will be an increase in knowledge and skills regarding active transportation and road safety among students, a decrease in perceived barriers to AST among parents and students, an improvement in child and parent attitudes around the importance of AST, and an increase in children's AST behaviour.

Materials & Methods

Intervention Evaluation Framework Used: Multiphase Optimization Strategy (MOST)

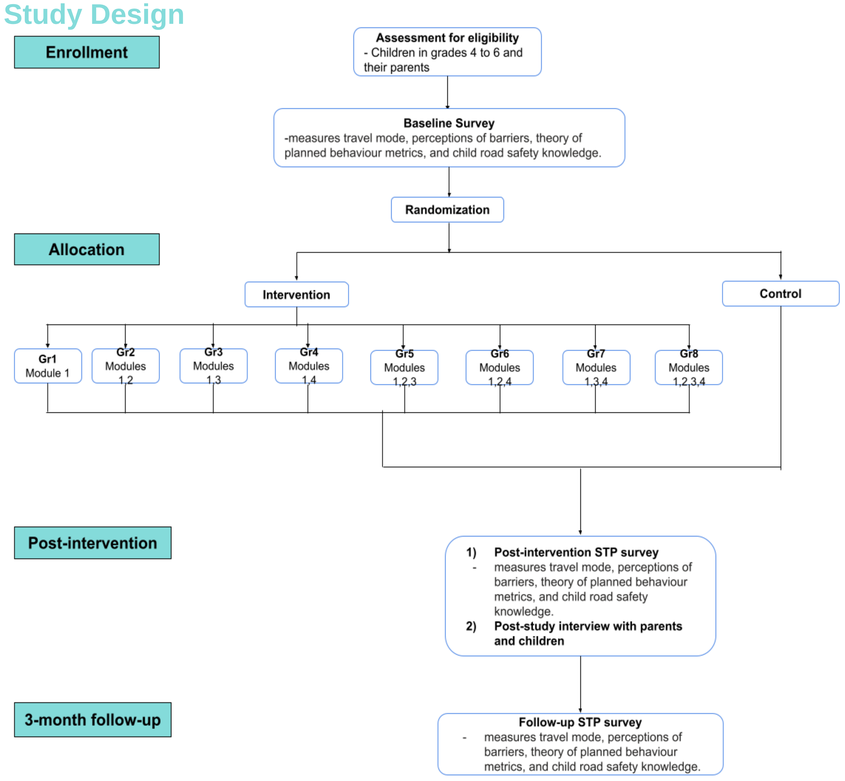
- A framework that focuses on maximizing the efficiency and effectiveness of an intervention by assessing each individual component to determine which combination of elements will influence a change in outcome.[2] The MOST framework is split into three steps:
  1. **Preparation** – Individual components that make up the intervention are identified.
  2. **Optimization** – Content delivery will be optimized by using an 8x1 factorial design. Eight intervention groups will be created to receive the different components of the intervention (i.e., **Group 1:** Module 1; **Group 2:** Modules 1 + 2; **Group 3:** Modules 1 + 3; **Group 4:** Modules 1 + 4; **Group 5:** Modules 1 + 2 + 3; **Group 6:** Modules 1 + 2 + 4; **Group 7:** Modules 1 + 3 + 4; **Group 8:** all modules).
  3. **Evaluation** – A randomized control trial will be used to test the effectiveness of each intervention combination. If the most effective intervention has not been determined, the MOST cycle will be repeated by returning to the preparation phase.[2]

Intervention Curriculum

There are four modules, and each module will consist of a summary video for parents to encourage their engagement, a reading, an audio-visual component, online activities, hands-on activities with family engagement, knowledge quiz, and a feedback questionnaire for process evaluation. Modules were developed using existing, well-established educational tools from different municipalities and organizations across Ontario.

- **Module 1:** Active Travel Knowledge
- **Module 2:** Pedestrian Road Safety
- **Module 3:** Signs and Infrastructure
- **Module 4:** Wheeling Safety and Skills

Study Design



Next Steps

- Start recruiting participants for September 2022 user Léger polling services.

References

1. Assailly, J. P. (2017). Road safety education: What works? *Patient Education and Counseling*, *100*, S24–S29. https://doi.org/10.1016/j.pec.2015.10.017
2. *Multiphase Optimization Strategy (MOST) | HARC*. (n.d.). Home Visiting Applied Research Collaborative (HARC). Retrieved August 11, 2022, from https://www.hvresearch.org/precision-home-visiting/innovative-methods/multiphase-optimization-strategy-most/
3. Martin, G., Graat, M., Medeiros, A., Clark, A. F., Button, B. L. G., Ferguson, K. N., & Gilliland, J. A. (2021). Perceived neighbourhood safety moderates the relationship between active school travel and health-related quality of life. *Health & Place*, *70*, 102623. https://doi.org/10.1016/j.healthplace.2021.102623
4. Peyman, N., Rezai-Rad, M., Tehrani, H., Gholian-Aval, M., Vahedian-Shahroodi, M., & Heidarian Miri, H. (2018). Digital Media-based Health Intervention on the promotion of Women's physical activity: A quasi-experimental study. *BMC Public Health*, *18*(1), 134. https://doi.org/10.1186/s12889-018-5025-5
5. *School Travel Planning*. (n.d.). Ontario Active School Travel. Retrieved August 10, 2022, from https://ontarioactiveschooltravel.ca/school-travel-planning/

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