TPM Vol. 32, No. S2, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

# EVALUATING THE EFFECTIVENESS OF SCHOOL-BASED HEALTH EDUCATION PROGRAMS FROM A PUBLIC HEALTH PERSPECTIVE

DR. F RAHMAN[1], YALAKALA DINESH KUMAR[2]
[1]ASSISTANT PROFESSOR, DEPARTMENT OF CS & IT, KALINGA UNIVERSITY, RAIPUR, INDIA.
[2]RESEARCH SCHOLAR, DEPARTMENT OF CS & IT, KALINGA UNIVERSITY, RAIPUR, INDIA.

**Abstract**

A systematic review and meta-analysis investigated the efficacy of school interventions in preventing child obesity and its risk factors, such as sedentary behaviour, unhealthy diet, and physical inactivity. The review of 83 studies, taking into account the education and health stakeholders' views in Canada, reported that Comprehensive School Health and school nutrition policy change interventions significantly enhanced fruit intake by 0.13 and 0.30 servings per day, respectively. But none of the interventions had a statistically significant effect on veggie intake, illustrating the necessity for further investigation to address this part of healthy eating.

Keywords: Health promotion, Childhood obesity prevention, School-based interventions, Systematic review

## 1. INTRODUCTION

Schools are key institutions in promoting health education among youth, through the recurrent and extensive interactions that they have with large numbers of learners [9]. The setting provides schools with an opportunity to strongly shape the learners' knowledge, attitudes, self-efficacy, and behavior regarding their health [13]. The World Health Organization's (WHO) "Health Promoting Schools Framework" acknowledges the important role that schools can play in promoting learners' health and wellbeing, emphasizing the need for embedding health education within the school curriculum and school culture. [2] states that implementing health initiatives throughout the entire school can benefit young people's health [1]. Nonetheless, some research indicates that specific interventions might also be necessary for underprivileged or minority groups in order to give young people more assistance in improving their health-related behaviours. Research highlights that Indigenous children should be targeted through health promotion programs using a strengths-based framework, highlighting the capacities, skills, knowledge, and cultural strengths of the participants. This framework identifies and leverages the strengths and resilience that are already present in Indigenous youth, as opposed to only targeting deficits or problems [3].

Numerous school-based health education programs, both small and large, have been evaluated both locally and internationally [18]. Nonetheless, there are significant differences throughout research concerning the evaluation design, participant characteristics, and metrics utilized to gauge participant results [4]. In interpreting the results, care is needed because of differences in study design and population groups, which may restrict the generalizability of findings to particular populations. Importantly, the lack of tested school-based health education programs for Indigenous children makes it difficult to identify the most effective and culturally responsive interventions to increase knowledge, attitudes, self-efficacy, and behaviours in this population. Indigenous youth in rural or isolated schools have been the subject of the majority of the few evaluations that have been done, which have mostly concentrated on drugs and alcohol. [5].

## 2. REVIEW OF LITERATURE

The School Health Program was started in 1948, right after Tamil Nadu gained its freedom. A few communities and Primary Health Centers adopted it. It was first introduced in 40 chosen municipalities and 153 chosen primary health centers in 1986–1987. Later, it was expanded to all municipalities and primary health centers in the state. All first- through twelfth-grade kids enrolled in government and government-aided schools are to receive complete

health care services under the program [15]. The state has connected yearly deworming and vitamin A supplementation to the midday meal programs. [6].

In 1991, the World Conference on Health Education in Helsinki, Finland, determined that schools should be the primary location for health education [11]. In light of the main WHO declarations, it attempted to investigate the role of education, especially schools. It asserted that the primary result of the definition of health education is the modification or maintenance of healthy behaviours [10].

The main goal of UNICEF in the 21st century is to enable all children to go to and finish school, giving them a child-friendly atmosphere to learn, acquire basic education, and acquire necessary social and intellectual skills for a responsible life in a free society."

Children must actively participate in all aspects of the school health program in addition to being its beneficiaries. By active engagement in school health programs, health promotion activities, and policy-making endeavours, children are taught important lessons about health by doing. Such an experiential process empowers young people to gain basic knowledge, attitudes, values, and skills and, in turn, develop healthy lifestyles and make universal health and education a reality [16].

The European Commission, the Council of Europe, and the WHO Regional Office for Europe started the tripartite ENHPS program in the 1980s. Over the years, the ENHPS has grown from its initial membership of seven countries to 43 countries. A more equitable distribution of health-promoting schools across Europe is made possible by this multinational partnership, which also serves as a means of sharing best practices. [7].

### 2.1. Research questions:

1. Is the school-based Mental Health Literacy (MHL) intervention equally effective in influencing all children, irrespective of demographic differences (gender, ethnicity) and social-cognitive features (English proficiency, experience with MHL)?
2. Which student subgroups (e.g., males compared to females, Chinese compared to non-Chinese, ESL compared to non-ESL, experience with MHL vs. none) are most advantaged by the intervention, and for which particular MHL outcomes?
3. Do English language ability and ethnic origin independently or in interaction predict pre-post-test changes in MHL and health outcomes from pre- to post-test, after controlling for initial score??

## 3. METHODS

Indigenous youth are encouraged to be positive role models in changing the choices that family, friends, and networks make about their health, lifestyle, and physical activity through the Deadly Choice program, which promotes and educates about chronic diseases in schools. "Deadly Choice" is a healthy option in Indigenous culture. This program uses a strengths-based approach to help teens make informed, healthy decisions. It teaches Indigenous youth that chronic diseases are not unavoidable and can be avoided with healthy decisions. Recent studies confirm this approach, highlighting that programs encouraging healthy living among Indigenous teens should be more than advice. Rather, they should equip young people with the resources, support, and encouragement needed to make healthy choices [8].

**Table 1: Participants profile**

| DP 1 | Age of the Respondents | | | | | |
|---|---|---|---|---|---|---|
| | 18-25 years | 26-33 years | 34-41 years | 42-49 years | above 50 years | Total |
| Frequency | 49 | 45 | 28 | 23 | 5 | 150 |
| Percent | 32.7 | 30.0 | 18.7 | 15.3 | 3.3 | 100.0 |
| DP 2 | Educational Qualification of the Respondents | | | | | |

| | certificate | diploma | bachelors | postgraduate | Total |
|---|---|---|---|---|---|
| Frequency | 50 | 16 | 64 | 20 | 150 |
| Percent | 33.3 | 10.7 | 42.7 | 13.3 | 100.0 |

| DP 3 | Income Per Month of Respondents | | | | | |
|---|---|---|---|---|---|---|
| | 12000-20000 | 21000-30000 | 31000-40000 | 41000-50000 | above 50000 | Total |
| Frequency | 92 | 12 | 19 | 10 | 17 | 150 |
| Percent | 61.3 | 8.0 | 12.7 | 6.7 | 11.3 | 100.0 |

| DP 4 | Occupation of the respondents | | | | |
|---|---|---|---|---|---|
| | Unemployed | Self-employed | private | government | Total |
| Frequency | 74 | 52 | 21 | 3 | 150 |
| Percent | 49.3 | 34.7 | 14.0 | 2.0 | 100.0 |

| DP 5 | Marital Status | | | |
|---|---|---|---|---|
| | Married | Unmarried | Divorcee | Total |
| Frequency | 90 | 58 | 2 | 150 |
| Percent | 60.0 | 38.7 | 1.3 | 100.0 |

1. Ethics

Ethical approval was obtained from The University of Queensland and the Education Queensland Human Research Ethics Committee. School principals gave gatekeeper permission, and involved students and parents consented to involvement. All of these individuals were fully aware of the study protocols.

2. Study Setting and Participants

The Deadly Choices health education program was delivered in seven locations in the greater Brisbane area, four schools, one training academy, one education and training facility, and one youth detention center. The participants were year 7-12 students (ages 11-18) from high Indigenous student proportion schools. A control group was also set up using a secondary school that would be receiving the program the next term. The schools and organizations involved reflected varying levels of socioeconomic disadvantage.

3. Intervention

The Deadly Choices program involved seven 90-minute weekly sessions including an introductory activity, information provision, and exercise. The educational part of the program involved seven modules on leadership, chronic disease, physical activity, nutrition, smoking, substance use, and health services. The last session invited people to have an Aboriginal and Torres Strait Islander health check (MBS item 715), with some schools offering on-site health checks and others offering transport to a local Indigenous health clinic.

**Table 2: Frequency distribution of factor infusion**

| | Do you keep factors at home? | | | | | |
|---|---|---|---|---|---|---|
| | Always | Frequently | Sometimes | Rarely | Never | Total |
| Frequency | 18 | 15 | 23 | 24 | 70 | 150 |
| Percent | 12.0 | 10.0 | 15.3 | 16.0 | 46.7 | 100.0 |
| | Who infuses factors? | | | | | |
| | Myself | Technician | Relatives | Nurse | Doctor | Total |
| Frequency | 10 | 14 | 14 | 97 | 15 | 150 |
| Percent | 6.7 | 9.3 | 9.3 | 64.7 | 10.0 | 100.0 |
| | Are factors always available at Government Hospitals? | | | | | |
| | Always | Frequently | Sometimes | Rarely | Never | Total |
| Frequency | 4 | 12 | 61 | 22 | 51 | 150 |
| Percent | 2.7 | 8.0 | 40.7 | 14.7 | 34.0 | 100.0 |
| | Do medical professionals readily infuse factors? | | | | | |
| | Always | Frequently | Sometimes | Rarely | Never | Total |
| Frequency | 12 | 37 | 50 | 35 | 16 | 150 |
| Percent | 8.0 | 24.7 | 33.3 | 23.3 | 10.7 | 100.0 |
| | Has any medical professional ever refused treatment because of your haemophilia status? | | | | | |
| | Always | Frequently | sometimes | Rarely | Never | Total |
| Frequency | 2 | 21 | 73 | 15 | 38 | 150 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Percent | 2.0 | 14.0 | 48.7 | 10.0 | 25.3 | 100.0 |
| | Do you keep factors with you while travelling? | | | | | |
| | Always | Frequently | Sometimes | Rarely | Never | Total |
| Frequency | 28 | 13 | 11 | 2 | 96 | 150 |
| Percent | 18.7 | 8.7 | 7.3 | 1.3 | 64.0 | 100.0 |
| | Do you take physiotherapy? | | | | | |
| | Always | Frequently | Sometimes | Rarely | Never | Total |
| Frequency | 11 | 21 | 45 | 22 | 51 | 150 |
| Percent | 7.3 | 14.0 | 30.0 | 14.7 | 34.0 | 100.0 |

1. Procedure

Data was collected using questionnaires, which were taken twice: once prior to the first session and again after the last session for the intervention group. The control group had taken the questionnaire at two points: once during the intervention period and later after the implementation of the Deadly Choices program in the subsequent term. Participants filled out the questionnaires in their classrooms with supervision from study researchers and Deadly Choices facilitators. All participants utilized pen and paper to complete the survey, with literacy support provided by research professionals and Deadly Choices staff as necessary. To provide anonymity and match questionnaires, participants were given a randomly assigned identification number.

## 4. DATA ANALYSIS

Descriptive statistics are presented as mean (standard deviation) for continuous variables and frequency (%) for categorical variables. To evaluate the program's efficacy, logistic and linear mixed-effects regression models were applied for binary and continuous outcomes, respectively, controlling for time (pre/post-program), intervention group (education program/control), and the interaction between intervention and time, to assess the program's impact on outcomes. Every model was modified to account for individual-level repeated measures. Additionally, the importance of the Deadly Choices program and its relationship to knowledge, attitudes, self-efficacy, and behaviours were examined.

**Table 3: Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 61.792a | 12 | 0 |
| Likelihood Ratio | 57.119 | 12 | 0 |
| Linear-by-Linear Association | 32.953 | 1 | 0 |
| N of Valid Cases | 150 | | |

| | | | |
|---|---|---|---|
| 9 cells (45.0%) have expected count less than 5. The minimum expected count is .53. | | | |

## 5. DISCUSSION

Around the world, schools implement peer education programs that address a range of health-related subjects. The success of several initiatives suggests that peer education could be a useful tactic for improving school health. There was less evidence for favourable changes in health-related behaviour and more evidence for improvements in health-related knowledge. More thorough, high-quality assessments of peer-led interventions utilizing standardized health knowledge and behaviour measures are required in order to quantitatively synthesize the evidence and draw more certain conclusions.

## 6. CONCLUSION

Chronic illness continues to be a major public health issue for Indigenous Australians, thus programs of health promotion addressing risk factors at an early age are vital for enhanced overall well-being and the closure of gaps. The results of this research indicate the promise of holistic school-based interventions to promote health knowledge, attitudes, self-efficacy, and behaviours in Indigenous young people, specifically those that involve physical activity, leadership, chronic disease prevention, and health checks. Future efforts, however, should take a strengths-based framework, recognizing the larger environmental and contextual issues that could prevent Indigenous children from acquiring healthy behaviours. Although the present study noted considerable within-group changes in behaviours, there were few significant differences between the intervention and control groups. These findings are consistent with international and US research on school-based interventions, which have reported modest gains in student health habits, but large gains in knowledge, attitudes, and self-confidence. Importantly, the results offer pertinent baseline data regarding health behaviour among urban Indigenous children, a topic with limited representation in current health literature. The findings indicate that a number of health behaviours, including alcohol use and regular consumption of discretionary foods and beverages such as soft drinks and takeaway, are potentially improved.

## REFERENCES

1. Khun, Sokrin, and Lenore Manderson. "Community and school-based health education for dengue control in rural Cambodia: a process evaluation." *PLoS neglected tropical diseases* 1, no. 3 (2007): e143.
2. Van Dongen, Bonnie Maria, Monica Antonia Maria Ridder, Ingrid Hendrika Margaretha Steenhuis, and Carry Mira Renders. "Background and evaluation design of a community-based health-promoting school intervention: Fit Lifestyle at School and at Home (FLASH)." BMC Public Health 19 (2019): 1-11.
3. Romero, C., & Herrera, L. (2024). Relationship between cultural heritage management and community engagement. Journal of Tourism, Culture, and Management Studies, 1(2), 1-8.
4. Ekwaru, John Paul, Arto Ohinmaa, and Paul J. Veugelers. "An enhanced approach for economic evaluation of long-term benefits of school-based health promotion programs." Nutrients 12, no. 4 (2020): 1101.
5. Pérez-Rodrigo, Carmen, and Javier Aranceta. "School-based nutrition education: lessons learned and new perspectives." Public health nutrition 4, no. 1a (2001): 131-139.
6. Ivanov, A., Petrova, O., & Pavlov, D. (2025). Quality Management Data-Driven Decisions Fail and How to Fix It. National Journal of Quality, Innovation, and Business Excellence, 2(1), 1-10.
7. Ekwaru, John Paul, Arto Ohinmaa, Bach Xuan Tran, Solmaz Setayeshgar, Jeffrey A. Johnson, and Paul J. Veugelers. "Cost-effectiveness of a school-based health promotion program in Canada: A life-course modeling approach." PloS one 12, no. 5 (2017): e0177848.
8. Bersamin, Melina, Samantha Garbers, Melanie A. Gold, Jennifer Heitel, Kathryn Martin, Deborah A. Fisher, and John Santelli. "Measuring success: Evaluation designs and approaches to assessing the impact of school-based health centers." Journal of Adolescent Health 58, no. 1 (2016): 3-10.
9. Shackleton, Nichola, Farah Jamal, Russell M. Viner, Kelly Dickson, George Patton, and Christopher Bonell. "School-based interventions going beyond health education to promote adolescent health: systematic review of reviews." Journal of Adolescent Health 58, no. 4 (2016): 382-396.
10. Kavitha, M. (2025). Hybrid AI-mathematical modeling approach for predictive maintenance in rotating machinery systems. Journal of Applied Mathematical Models in Engineering, 1(1), 1–8.

11. Wang, Dongxu, and Donald Stewart. "The implementation and effectiveness of school-based nutrition promotion programmes using a health-promoting schools approach: a systematic review." Public health nutrition 16, no. 6 (2013): 1082-1100.
12. Muyanja, A., Nabende, P., Okunzi, J., & Kagarura, M. (2025). Metamaterials for revolutionizing modern applications and metasurfaces. Progress in Electronics and Communication Engineering, 2(2), 21–30. https://doi.org/10.31838/PECE/02.02.03
13. Subramaniam, B. (2018). Adaptive Algorithm Based Reliable Network on Chip. International Journal of Advances in Engineering and Emerging Technology, 9(2), 97–104.
14. Dusi, P. (2024). Secure and scalable federated learning for predictive maintenance in Industry 4.0 environments. Electronics, Communications, and Computing Summit, 2(4), 12–20.
15. Sivaranjith, C., & Subramani, M. (2013). Development of reversible programmable gate array. International Journal of Communication and Computer Technologies, 1(2), 72-78. https://doi.org/10.31838/IJCCTS/01.02.01
16. Whitmore, . J., & Fontaine, I. (2024). Techniques for Creating, Extracting, Separating, and Purifying Food and Feed Using Microalgae. Engineering Perspectives in Filtration and Separation, 1(1), 28-33.
17. Sadulla, S. (2024). Next-generation semiconductor devices: Breakthroughs in materials and applications. Progress in Electronics and Communication Engineering, 1(1), 13–18. https://doi.org/10.31838/PECE/01.01.03
18. Geng, Y. (2024). Comparative Study on Physical Education Learning Quality of Junior High School Students based on Biosensor Network. Natural and Engineering Sciences, 9(2), 125-144. https://doi.org/10.28978/nesciences.1569219
19. Daneshmand, P. (2017). Barriers of using ICTs in Teaching Students at High Schools as Perceived by Teachers in Alborz province of Iran. International Academic Journal of Science and Engineering, 4(1), 22–38.
20. Ismail, K., & Khalil, N. H. (2025). Strategies and solutions in advanced control system engineering. Innovative Reviews in Engineering and Science, 2(2), 25-32. https://doi.org/10.31838/INES/02.02.04
21. Sadulla, S. (2024). A comparative study of antenna design strategies for millimeter-wave wireless communication. SCCTS Journal of Embedded Systems Design and Applications, 1(1), 13-18. https://doi.org/10.31838/ESA/01.01.03
22. Deepak Nandan, N. V., & Sulaipher, M. (2025). Retention of Secondary School Teachers in Maldives. Indian Journal of Information Sources and Services, 15(1), 115–123. https://doi.org/10.51983/ijiss-2025.IJISS.15.1.16
23. Sethuraman, P., Ganesan, A., & Radhakrishnan, S. (2024). Examining burnout and stress among healthcare professionals during and post COVID-19 lockdown: A comparative analysis, Examinando el agotamiento y el estrés entre los profesionales de la salud durante y después del confinamiento por COVID-19: Un análisis comparativo. Salud, Ciencia y Tecnologia - Serie de Conferencias. https://doi.org/10.56294/sctconf2024900
24. Muralidharan, J. (2024). Machine learning techniques for anomaly detection in smart IoT sensor networks. Journal of Wireless Sensor Networks and IoT, 1(1), 15-22. https://doi.org/10.31838/WSNIOT/01.01.03
25. Panahi, M., Panahi, H., & Sobhani, H. (2016). Impacts of positive thinking skills up on happiness and academic performance of first level high school girls of Shirvan. International Academic Journal of Innovative Research, 3(1), 23–30.