

Impact of Structured Teaching Programs on High School Students' Knowledge on Dengue Fever Causes and Preventive Strategies: A Systematic Review

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KEYWORDS

Structured Teaching Programs (STP), High school students, Dengue fever, Causes, Preventive Strategies

ABSTRACT

This study conducts a “systematic literature review” (SLR) to gain a comprehensive idea regarding the impact of “structured teaching programs” (STP) on the knowledge, attitude and awareness of high school students regarding dengue fever, its causes and preventive strategies. Studies from reputed and reliable journals about the topic that were published in the past six years and were available in full text pdfs in google scholar were chosen as the secondary data sources. Analysis of the data showed that adopting STP in most cases has a positive impact on the knowledge of high school students about dengue fever. Through STP, awareness about dengue fever could be enhanced, attitude of students changed and knowledge level improved significantly. In most cases, students' performance on the tests conducted after the educational intervention in the form of STP was considerably better compared to their performance prior to the intervention program.

1. Introduction:

Dengue fever is a viral infection that is usually spread through infected mosquitoes among humans. It is more apparent in subtropical or tropical regions and semi urban or urban areas (WHO.int, 2024). The symptoms of the fever are headache, nausea, rash, body ache and high fever. It often gets critical to the point where it becomes life threatening. As of January, 2025, more than 100 000 cases and nearly 10 deaths were reported from 24 regions globally (ECDC.europa.eu, 2024). Dengue circulation is usually reported in SouthEast Asia (SEA) countries, Africa and America (ECDC.europa.eu, 2024). Therefore, spreading awareness and knowledge about dengue fever has become essential as it ensures that necessary preventive measures are taken by individuals to avoid mosquito bites, recognise symptoms earlier and seek medical attention when required. Since there is no dedicated treatment to dengue fever, treating symptoms as early as possible frames the core principle of the treatment. Hence, aiming to improve knowledge among high school students about dengue fever has gained priority in recent years.

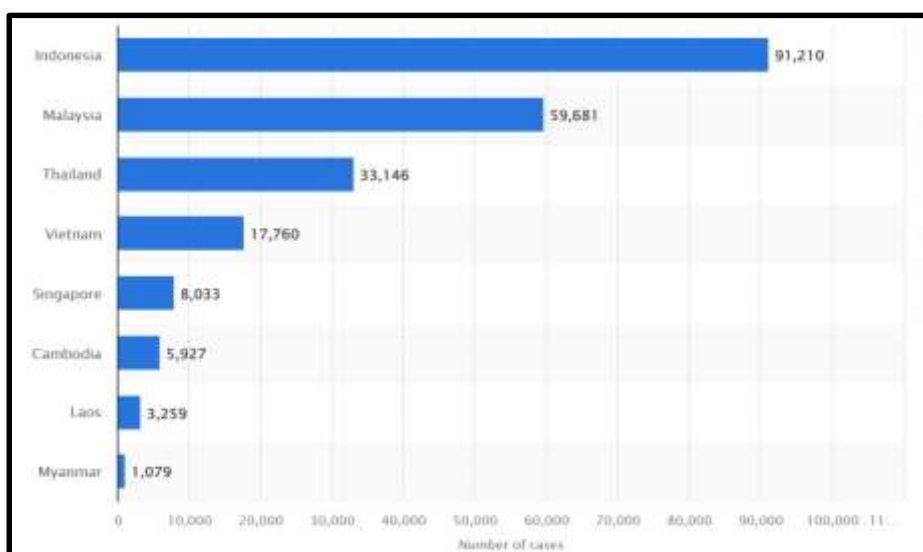


Figure 1: Number of cases of dengue fever in SEA nations
(Source: Statista, 2024)

Almost half the world now faces the risk of infection. Each year almost 100 to 400 million infections of dengue fever are noted and since the infection in most cases are asymptomatic or only produce mild health issues, the virus causes more severe illness occasionally (WHO.int, 2024). As noted above, the population in the SEA nations are more exposed to the threat of dengue (Statista, 2024). Several awareness initiatives have been taken up thus far by countries that are severely impacted by dengue however, spreading awareness among young students and adults needs to be prioritized to enable the next generation to better deal with the illness. The relevance and impact of STP regarding causes and preventive measures of dengue fever therefore has become the primary purpose of this study. A systematic review is done in this article to provide a comprehensive yet concise understanding on the topic.

2. Methodology

Effective completion of a research and presentation of the findings is primarily dependent on choosing the right methodology and finishing the research by following through the chosen methodology efficiently. For this study, a “systematic literature review” (SLR) has been chosen as it provides a higher quality review with negligible bias and errors (Xiao & Watson, 2019). Through SLR, relevant and specific researches on similar topics have been chosen and their findings were critically evaluated and summarised to provide a concise idea on the research topic. The SLR process in this research comprises two important steps where in the first step relevant studies from reliable authors and sources are identified, read and their findings presented and in the second step a comprehensive discussion regarding the insights gained from the previous steps is done. Moreover, there are further sub steps to the first step such as identification, selection, eligibility and inclusion. Identification of articles was done through a non-automatic search on the google scholar. This helped identify relevant articles on the topic from reliable journals. Then the articles that were published within the last six years time frame and were available in full-text pdf were selected for review. The eligibility of the articles was determined based on the keywords such as “dengue fever”, “teaching programmes”, “causes and preventive strategies” and others. Last but not the least, the inclusion of the article was based on its ability to address the primary objective of this study. The second step, i.e discussion, provides critical insight into the impact of STP on the knowledge of high school students about dengue fever causes and its prevention strategies. Summarised findings in the first step forms the basis of the discussion and ensures that the objective of this research is fulfilled efficiently.

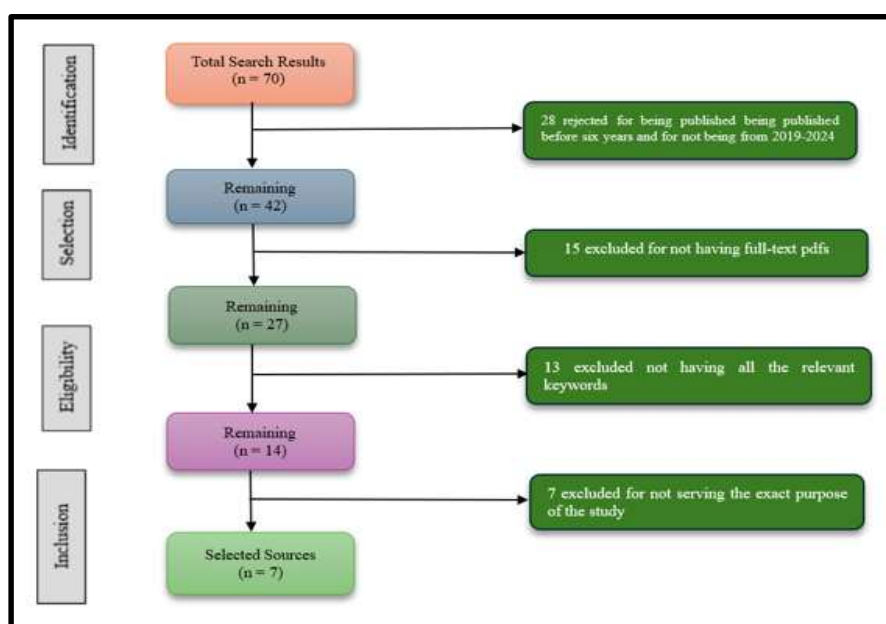


Figure 2: Research process summary
 (Source: Self-developed)

3. Findings And Results

Author and year of publication	Objective of the article	Methodology chosen	Summary of the findings
"Devi, R. G. (2019)"	To assess the impact of STP on the knowledge level of children regarding dengue fever, its causes and prevention.	An "evaluative research approach" and "pre-experimental design" was chosen for this study. "Purposive Non random sampling technique" was adopted to determine the sample population and the schools for data collection. 60 children between the age group of 10 to 18 years were chosen. Through "structured interview" data was collected.	This study has gathered primary data on the way a STP can positively influence the understanding of students regarding dengue fever. As per the interview data, there was a distinct difference between the knowledge possessed by students prior to the teaching programs and post teaching programs suggesting that such STP increases awareness and improves knowledge about a certain cause. Irrespective of poor, rich, underprivileged, privileged backgrounds, such health campaigns improved patient education at an early age bringing positive results.
"Jain, A., Dandotiya, D., Dubey, D., & Patel, D. (2023)"	To assess the knowledge of adolescent children aged between 14 to 18 years about dengue fever and analyse the efficacy of STP to improve the knowledge level.	A sample population of 60 students from "government higher secondary schools" aged between 14 to 20 years have been chosen through "simple random sampling technique". Primary qualitative data is gathered from the sample population through a structured interview method.	The findings of this study establishes that STP can be highly effective in improving knowledge level about dengue, its causes and preventive measures among adolescent children as there was a distinct difference between the "pre-test" and "post-test" level of awareness and knowledge about dengue fever. Before the implementation of STP, children had "inadequate knowledge" about the illness and a lot of them had moderately adequate knowledge. However, none of them have adequate knowledge. After STP, the majority of the children gained adequate knowledge on dengue fever.

<p>“Santos, S., Smania-Marques, R., Albino, V. A., Fernandes, I. D., Manguiera, F. F. A., Altafim, R. A. P., ... & Traxler, J. (2022)”</p>	<p>To analyse the behavioural changes among students that took part in an educational intervention related to the prevention and control of arboviral diseases</p>	<p>A “pre-post-intervention” methodology was adopted to analyse the shift in behaviour of children. A “school-based intervention” was conducted among the students through a “self-reported questionnaire”.</p>	<p>The data analysis in this study established that there is a significant difference in the behaviour of the target population after the intervention. The behavioural shift was positive and most apparent. Students usually were noted to show a lower fear and lower self-perception regarding the risk related to acquiring mosquito borne diseases. However, an STP has a greater impact on the larger group to motivate them to adopt preventive measures to effectively deal with dengue fever.</p>
<p>“Mahajan, N., & Jadhav, V. (2019)”</p>	<p>To evaluate the impact of “planned teaching program” on awareness and knowledge regarding “dengue fever” among specific junior students</p>	<p>50 “junior college students” were chosen as the sample population. The data collection was done through a “pre-tested structured questionnaire”.</p>	<p>The “planned teaching program” was carried out at the end of the pre-test. Then the post-test was done after the 7 days period of the “planned teaching programme”. The findings show that there was significant improvement among the students’ knowledge level about dengue fever, its causes and prevention after the teaching programme was conducted. Therefore, such a teaching programme can be considered as an efficient tool to improve knowledge of students about dengue fever.</p>
<p>“Aslam, F., Bibi, R., Din, I. L., Anwar, S., Mehboob, D. Y., Habib, U., & Fatima, A. (2024)”</p>	<p>To analyse the impact of educational intervention methods in the improvement of awareness among high school students about “dengue fever and its preventive measures”</p>	<p>A quasi-experimental research design was adopted for this study along with a “convenient sampling” method. The data was gathered through questionnaires and the sample size was 36.</p>	<p>Statistical data analysis in this study suggested that there was considerable difference in the “pre and post intervention awareness score” among students after the session related to health education on dengue fever. The findings of this research establishes that through educational intervention awareness among students regarding dengue fever can be improved. They gained a comprehensive idea about the causative agent, transmission modes of the virus, symptoms, infection mechanisms and preventive measures through the educational intervention. Educational interventions help transform the behaviour and attitude of students regarding control measures for dengue fever.</p>

<p>“Sonali, M. G., Pritjeet, M. G., Shubhangi, M. G., & Seema, M. J. (2020)”</p>	<p>To analyse the effect of STP on improving awareness and knowledge about dengue fever and its prevention among GNM students</p>	<p>An evaluatory approach and quasi experimental research design was adopted for this research. A sample set of 50 GNM students have been chosen through “non-probability purposive sampling”</p>	<p>The findings of this study showed that the knowledge and awareness among students about dengue have improved significantly after going through the STP. The study further denotes that proper, accurate and up-to-date knowledge can be provided to the students about dengue fever through STP practices making sure that the knowledge level of students is not stagnant and they gain knowledge about the changing methods to deal with this illness. STP can serve as a relevant intervention measure to enable individuals to be better prepared to deal with emergency situations.</p>
<p>“Sarmiento-Senior, D., Matiz, M. I., Vargas-Cruz, S., Jaramillo, J. F., Olano, V. A., Lenhart, A., ... & Overgaard, H. J. (2022)”</p>	<p>To examine whether an enhanced educational intervention program in schools can improve knowledge, practices and attitude towards dengue disease among student</p>	<p>A “factorial cluster-randomized controlled trial” was done in 35 rural primary schools to determine students’ pre-intervention knowledge and post-intervention knowledge about dengue.</p>	<p>The findings of this research show that educational intervention initiatives enhance knowledge among students regarding dengue fever. Students gain a critical idea about the causes, effects, symptoms, treatment scope and preventive measures through such initiatives. However, it has been noted that there was a slight difference between the components of “attitude and practices” among students. The attitude and knowledge positively changed after the educational intervention, yet transforming practices towards treatment and prevention of dengue fever was not significant. On the other hand, dissemination of knowledge that was acquired through the educational interventions to the parents of the participating children happened seamlessly in case of dengue fever.</p>

4. Discussion

The spread of dengue has become of the most common concern as a great number of the human population is affected by dengue fever every year. As per the above systematic review of previous literature, the role of STP in increasing awareness and knowledge about dengue fevers, its causes and prevention has increased significantly as implementing STP in most cases is noted to have a positive impact on students (Jain et al. 2023). STP can provide students with relevant and up-to-date knowledge to high school students regarding the way dengue fever can be prevented (Sonali et al. 2020). Most of the above-mentioned literature reviews have adopted a “quasi experimental research design” which showed that the knowledge about dengue fever among students before going through the STP was inadequate. However, going through the STP in most cases ensured that the students have a moderately adequate knowledge level about dengue fever.

Furthermore, effective implementation of STP ensures that students from all social backgrounds irrespective of their financial status gain knowledge about the illness which can be considered as one of the most significant measures for the prevention of dengue fever (Devi, 2019). In most cases, the behaviour and attitude of the target population towards dengue fever has improved significantly with the implementation of STP (Aslam, 2024). However, changing practices for the prevention and treatment of this illness seemed to be considerably more difficult (Sarmiento-Senior et al. 2022). Considering the benefits of STP it can be treated as an efficient tool for the prevention of the disease (Mahajan & Jadhav, 2019). STP serves as the perfect educational intervention measure to provide comprehensive knowledge about the causative agent, transmission modes of the virus, symptoms, infection mechanisms and preventive measures of dengue virus among students.

5. Conclusion

This study has established that STP can serve as one of the most significant preventive measures for dengue fever as it empowers the school going teenagers with relevant knowledge about the causes, basic treatment and preventive measures for dengue fever. As the study shows, conducting STP disseminates the knowledge about such factors from the students to their parents, preparing an entire community to better deal with the illness. Moreover, STP can ensure that the knowledge level of students regarding dengue fever is not stagnant providing up-to-date knowledge to the students. In most cases effective implementation of STP helps improve behaviour, attitude and knowledge of students to make sure that they are better equipped which enables them to take an improved measure to prevent dengue and related risks. Therefore, it can be concluded that, the impact of STP on the development of knowledge level and awareness about dengue fever, its causes and preventive strategies is highly positive.

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