ASPI | Afarand Scholarly Publishing Institute; Turkey
ISSN: 2345-2897; Health Education and Health Promotion. 2025;13(3):487-494. 10.58209/hehp.13.3.487

Sustainability Awareness in Dengue Prevention Through Structural Equation Modeling Analysis of Social Capital Model

ARTICLE INFO

Article Type
Original Research

Authors
Yulianto B.[1] *PhD*
Saadah N.*[1] *PhD*
Suhron M.[2] *PhD*
Prasetyo A.[1] *MPH*
Khasanah U.[1] *MSc*

How to cite this article
Yulianto B, Saadah N, Suhron M, Prasetyo A, Khasanah U. Sustainability Awareness in Dengue Prevention Through Structural Equation Modeling Analysis of Social Capital Model. Health Education and Health Promotion. 2025;13(3):487-494.

[1]Department of Nursing, Faculty of Nursing, Surabaya Ministry of Health Polytechnic of Health, Surabaya, Indonesia
[2]Department of Nursing, Faculty of Nursing, Noor Huda Mustofa University, Bangkalan, Indonesia

*Correspondence
Address: Department of Nursing, Faculty of Nursing, Surabaya Ministry of Health Polytechnic of Health, Jalan Pucang Jajar Tengah No. 56 Surabaya, Indonesia. Postal Code: 60282
Phone: +62 (812) 5945790
saadahnurlailis7@gmail.com

Article History
Received: July 1, 2025
Accepted: August 12, 2025
ePublished: August 20, 2025

ABSTRACT

Aims The implementation of a social capital model-based prevention approach significantly influences the enhancement of sustainability awareness in social communities. This study aimed to analyze sustainability awareness in dengue prevention as a result of developing the social capital model.

Materials & Methods This observational study was conducted on a sample size of 140 respondents selected from five community health centers in East Java province using area or cluster sampling technique. Statistical analysis was conducted using structural equation modeling with Smart Partial Least Squares to assess the relationships between research parameters and to test hypotheses, assisted by the proposed software.

Findings All independent parameters, including value (X1), belief system (X2), cooperation (X3), participation (X4), perception (X5), and satisfaction (X6), had a significant positive influence ($p<0.05$) on sustainability awareness.

Conclusion The social capital model-based prevention approach significantly enhances awareness among both patients and the community simultaneously.

Keywords Social Capital; Awareness; Prevention; Dengue; Structural Equation Modeling

CITATION LINKS

[1] Social capital model to increase sustainability awareness in dengue ... [2] Conceição Gomes Machado de Araújo K. Determining the association between dengue ... [3] Institutional strengthening as an anticipatory measure for dengue ... [4] Assessment of programs to control the endemic ... [5] Eco-health survey effort to diagnose readiness for sustainability ... [6] The social capital ability to communal cattle ... [7] Dengue as a disease threatening global health: A narrative ... [8] Effectiveness of positive deviance ... [9] Community knowledge, attitudes, and ... [10] Knowledge, attitudes, and practices regarding dengue ... [11] Participatory: Stakeholder's engagement toward dengue control ... [12] Sustainable, healthy cities: Protocol of a mixed methods evaluation ... [13] A qualitative exploration of community stakeholders perspectives ... [14] Interactions between ventrolateral prefrontal and anterior cingulate cortex during ... [15] Effects of stress on the structure and function ... [16] The social capital of health cadres and ... [17] Local tips, global impact: Community-driven ... [18] Knowledge, attitude and practice (KAP) and risk factors on ... [19] The influence of social capital on drought-caused climate ... [20] Assessing the basic knowledge and awareness of dengue fever ... [21] Facilitators and barriers to engaging communities in ... [22] Social capital and its psychological consequences on consumer ... [23] Influence of religiosity and spirituality on the adoption of behaviors of epidemiological ... [24] Modeling of dengue by cluster analysis ... [25] Autoregressive spatial modeling of possible ... [26] ECO-Campus: A conceptual model unravelling ... [27] A cluster of autochthonous dengue ... [28] Social capital in dengue control ... [29] Social capital capacity as prediction ... [30] A social-ecological analysis of community ... [31] Determining the relationship between dengue and ... [32] The impact of dengue viruses: Surveillance, response, ... [33] Spatiotemporal expansion ... [34] Temporal trend, space risk and factors associated ... [35] Community knowledge, attitudes, and ... [36] Correlation analysis model of social capital and innovation performance ... [37] Effects of health education based intervention on community's perception, healthy house, and social capital ... [38] The influence of smart green spaces on environmental awareness, social cohesion, and life satisfaction ...

Introduction

The social capital model (SCM)-based prevention approach has emerged as a developing strategy in modern Dengue hemorrhagic fever (DHF) prevention. The concept of the SCM emphasizes Sustainability Awareness in an intense, comprehensive, and non-judgmental manner. The integration of SCM in Dengue prevention aims to create balance and enhance Sustainability Awareness in Dengue prevention [1]. In the context of public health prevention and promotion, this approach benefits not only patients with physiological disorders but also the community and health workers who face the daily challenges of preventing the spread of larvae and breaking the transmission chain of the Aedes mosquito [2].

The implementation of SCM-based prevention significantly influences the enhancement of sustainability awareness in social communities [3]. Community members often struggle with emotional regulation, recognizing maladaptive thoughts, and establishing healthy interpersonal relationships. By implementing SCM-based prevention, patients and communities are encouraged to become aware of and recognize their thoughts without succumbing to harmful automatic responses [4]. Increasing the adoption of SCM-based prevention fosters systematic awareness of thoughts, helping patients and communities improve emotional regulation and reduce maladaptive behaviors. Research indicates that this type of intervention can effectively enhance sustainability awareness among patients and communities within social settings [5].

Another impact of integrating SCM-based prevention into public health, in the form of prevention and health promotion, is reflected in the increased awareness among patients and communities to participate in preventing the spread of DHF and actively engage in breaking the transmission chain of the disease [6]. This awareness is fostered through collective efforts in the community, driven by a greater emotional presence, heightened empathy, and improved personal psychological management [7]. The quality of SCM-based prevention implementation relies on patient awareness, as the involvement of the social community in DHF prevention is a crucial component supporting the overall prevention process [8].

Within the framework of this prevention model, the engagement of patients and communities cultivates awareness and facilitates the exploration of feelings without fear of judgment. This approach has proven effective in building trust and fostering open, meaningful two-way communication [9]. The SCM-based prevention model in public health serves as a means of prevention and health promotion, as evidenced by the increased awareness among patients and communities, which creates space for self-reflection, enhances recognition of personal and professional boundaries, and improves the ability to identify stress signals early [10]. There is a rise in awareness among patients and within the social community involved in DHF prevention [11].

The effectiveness of SCM-based prevention is also closely linked to system and organizational support. The implementation of SCM-based prevention programs in healthcare institutions must be accompanied by supportive policies, ongoing training, and the establishment of a culture of patient and community awareness regarding prevention [12]. The success of prevention implementation in public health services depends not only on individual capacity but also on the organization's commitment to integrating it into a holistic care system [13]. The positive impact of SCM-based prevention in community nursing can be observed through neuropsychological dimensions. Implementation of SCM-based prevention has been shown to enhance awareness related to emotional regulation, particularly in areas, such as the medial prefrontal cortex and anterior cingulate cortex [14]. These changes correlate with an individual's ability to manage stress, reduce reactivity to negative stimuli, and increase cognitive flexibility in prevention efforts [15].

The SCM-based prevention model also contributes to reducing internalized stigma among patients and the community by raising awareness of DHF prevention. Through a non-judgmental, awareness-based approach, patients are encouraged to accept their condition without blame or judgment [16]. This fosters increased self-esteem and motivation to enhance awareness of DHF prevention. When patients and the community embrace these principles, a more inclusive, open, and prejudice-free environment is created [17]. The SCM-based prevention model within a service culture can establish a strong social support system, which accelerates the psychosocial recovery process, particularly in prevention efforts [18].

The SCM-based prevention model also enhances awareness in ethical decision-making. Patients and the public are more likely to calmly recognize moral dilemmas and consider various perspectives before taking action [19]. This is crucial in the context of prevention, which often involves challenging decisions regarding patient rights, safety, and the balance between individual freedom and compliance with the implemented prevention measures. The implementation of SCM-based prevention encourages patients and the public to act not only based on technical rules but also from a place of heightened awareness and professional responsibility [20].

Developing and implementing SCM-based prevention requires a systematic and evidence-based educational approach. An effective training curriculum should include a theoretical understanding of SCM-based prevention as well as

mentoring by experienced facilitators [21]. Evaluation of program success can be conducted by measuring psychological indicators such as work stress, anxiety, awareness, and life satisfaction, along with clinical performance indicators like documentation quality, inter-team communication, and adherence to DHF prevention standards. Positive evaluation results will serve as the foundation for strengthening policies and expanding the program to other service units [22]. The SCM-based prevention model also creates opportunities for cross-disciplinary collaboration among nurses, psychologists, psychiatrists, and occupational therapists. This interdisciplinary approach allows each profession to contribute according to their competencies, grounded in the principle of awareness. This strengthens team unity in assisting the implementation process of SCM-based prevention and fosters mutual support. Awareness serves as a shared language that connects healing efforts within a bio-psychosocial-spiritual framework [23].

In the long term, the SCM-based prevention model not only enhances awareness but also fosters a more reflective, self-aware, and resilient identity and responsibility among patients and communities in DHF prevention. This transformation reflects a shift in values from merely being physical and psychological healers to becoming recovery companions who are fully present for both patients and themselves [24]. Amid the dynamics of global health challenges, this approach promotes awareness among patients and the community of a more humane, sustainable, and meaningful prevention system for all parties involved [25].

This study aimed to analyze in depth the impact of SCM-based prevention implementation on patient and community awareness. The primary focus is on how SCM-based prevention implementation can enhance awareness of DHF prevention and strengthen therapeutic relationships. Furthermore, this investigation sought to identify the types of systemic support necessary to achieve the sustainable implementation of SCM-based prevention programs in healthcare settings. By mapping the relationship between SCM-based prevention practices and indicators of psychosocial well-being, this study is expected to provide both theoretical and practical contributions to the development of a more humanistic and evidence-based prevention model.

Materials and Methods

Study design and participants

This observational study was conducted on 140 patients selected using area or cluster sampling from five public health centers in East Java province. This population selection was based on the understanding that both patients and their companions play a crucial role in awareness and rapid decision-making. The inclusion criteria consisted of all female patients who resided in the same household, were receiving treatment, were under 20 years of age, and had the considered education level.

The number of public health centers was five community health centers in East Java province, which are located in close proximity to each other.

Respondents with cognitive impairments or severe communication barriers were excluded from the research sample [26].

Cluster sampling strategies are employed when the item being researched or the data being collected involves a very large population, such as the population of a district, province, or nation. To select the population that would serve as the data source, samples are obtained from predefined populated locations [27].

From the existing population, a sample size of 140 respondents was determined, divided proportionally among each community health center, with an average of approximately 28 respondents per center. This number was deemed sufficient to support the quantitative analysis, particularly in testing the correlation between the implementation of SCM-based prevention and patient and community awareness.

Data collection

The present investigation utilized a primary data model derived from a questionnaire administered to respondents. Questionnaires are a method of evidence collection conducted by providing a set of questions for participants to respond to. The questionnaire was created in the form of a Google Form.

Prior to distributing the questionnaire, reliability and validity assessments were conducted to ensure the effectiveness and consistency of the measurement tool. The Cronbach's alpha test was used to assess reliability, along with factor analysis and construct validity. The survey in question had been validated through exploratory methods to confirm its reliability and applicability for the context of this research. Furthermore, specific guidelines were followed to ensure appropriate representation when selecting community health facilities. The criteria used included classifying community health facilities by type, physical location, and the number of patients. This selection of community health centers influenced the generalizability of the study results, as the findings were more relevant to community health centers with similar characteristics. This should be taken into account when drawing broader conclusions from the results of this study.

This study utilized tools developed from SCM-based prevention, including closed questions with a Likert scale. Data were collected using these tools, which were scored as follows: 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=strongly agree. Approximately 95% accuracy, sensitivity, and specificity were achieved through

criterion-related validity testing. Measures of demographic parameters, such as age and education were included, while factors related to SCM-based prevention, such as values, belief systems, cooperation, participation, perception, and satisfaction, demonstrated discriminant validity. A single-factor unidimensional model with a factor score of 0.953 exhibited structural validity. Both inter-rater reliability (Krippendorff's alpha=0.872) and internal consistency (Cronbach's alpha=0.931; Spearman-Brown coefficient=0.947; Guttman split-half coefficient=0.927) showed excellent results.

Data collection

Researchers distributed the questionnaires to respondents at five public health centers in East Java. A brief description of the arrangement and types of questions used in the Google Form may help clarify how the data was collected. This questionnaire included closed-ended questions with a Likert scale, multiple-choice questions, and open-ended questions. The use of these types of questions enabled researchers to obtain quantifiable data. All methods were performed in accordance with the relevant guidelines and regulations.

Statistical analysis

Smart partial least squares (PLS) software was used to test the correlation between research parameters and to validate the hypothesis proposed by the researcher regarding the SCM-based prevention. Regression analyses were conducted to obtain valid data related to the questionnaire value indicators, using a Likert scale approach. This structural equation modeling (SEM) model was designed to investigate the relationships among factors, whereby SEM was used to evaluate the structure of the relationship between the hypothesized dependent and independent parameters. SEM enables researchers to assess complicated models that incorporate numerous latent parameters and causal linkages, while also addressing both measurement error and construct validity concurrently. This SEM structure is ideal for evaluating complex predictions and for gaining a better understanding of the dynamics of the parameters in this investigation.

Findings

Most participants were from the 20-35 age group (83%), which fell within the productive age range. From an educational perspective, most respondents had a high school academic background (72%), suggesting that the majority had a solid foundation of information. Although nearly half were housewives (56.8%), mothers played a crucial role in raising awareness and influencing respondents' perspectives as policymakers. Values showed good results (61% or higher), the belief system scored well (63%), cooperation was rated positively (58%), participation was good (68%), perception had a lower score (23%), satisfaction was rated positively (71%), and sustainability awareness scored well (77%; Table 1).

Table 1. Frequency of the studied parameters

Parameter	Category	Frequency (%)
Age (year)	<20	12 (8.5)
	20-35	117 (83.5)
	>35	11 (8)
Education	SD	4 (2.25)
	Junior high school	29 (21)
	High school	100 (72)
	College	7 (4.75)
Job	Civil servant	2 (1.4)
	Private	34 (24.3)
	Farmer	24 (17.5)
	Housewife	80 (56.8)
Value (X1)	Good	86 (61)
	Enough	54 (39)
Belief system (X2)	Good	88 (63)
	Enough	52 (37)
Cooperation (X3)	Good	81 (58)
	Enough	59 (42)
Participation (X4)	Good	95 (68)
	Enough	45 (32)
Perception (X5)	Good	32 (23)
	Enough	108 (77)
Satisfaction (X6)	Good	99 (71)
	Enough	41 (29)
Sustainability awareness (Y)	Good	108 (77)
	Enough	32 (23)

Analysis of construct reliability, through analysis of Cronbach's Alpha, composite reliability, Rho A, and average variance extracted (AVE), showed that all indicators in each construct had a good level of reliability. The internal consistency of each construct was in the very adequate category, suggesting that the items were able to measure the intended aspects stably. Composite reliability further supported this finding, with high values across all constructs, indicating that the measurement parameters had strong composite reliability in reflecting the latent construct.

Table 2. Composite reliability and Cronbach's alpha examination

Construct	Cronbach's Alpha	Rho A	Composite reliability	Average variance extracted
Value (X1)	0.861	0.972	0.961	0.737
Belief system (X2)	0.784	0.765	0.732	0.786
Cooperation (X3)	0.623	0.843	0.878	0.780
Participation (X4)	0.826	0.722	0.837	0.688
Perception (X5)	0.875	0.904	0.898	0.957
Satisfaction (X6)	0.885	0.815	0.768	0.812
Sustainability awareness (Y)	0.851	0.822	0.917	0.772

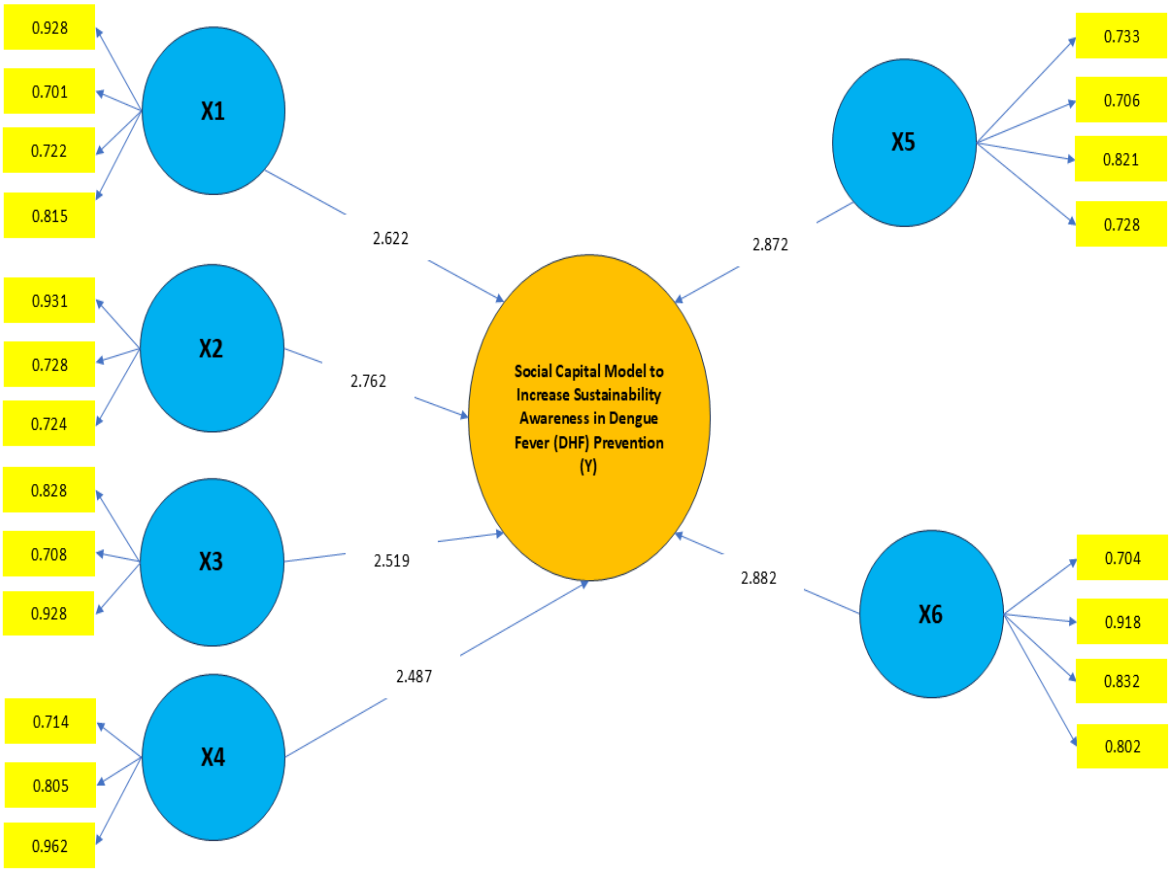

Figure 1. Social capital model (SCM).

Additionally, the Rho A values provided further confirmation of internal consistency and supported the accuracy of the reliability estimates used in the partial least squares structural equation modeling (PLS-SEM) approach. The indicators consistently measured important dimensions in the SCM-based prevention. This was evident from the representation of measurements, such as the suitability of the program to nursing practice, the frequency of application of mindfulness techniques in clinical interactions, and the active involvement of nurses in private practice.

All constructs also showed AVE values above the minimum threshold of 0.50, indicating that a sufficiently high proportion of the indicator variance was explained by the latent construct. Thus, the convergent validity of all constructs was adequately achieved. This reliability and validity indicated that the instrument used was reliable for measuring the SCM-based prevention (Table 2 and Figure 1).

All indicators in the SCM-based prevention model had a significant correlation with patient and community awareness. The belief system in clinical interactions played a significant role in enhancing the quality of DHF prevention services. Furthermore, the support from cooperation for the SCM-based prevention reflected a significant correlation. Similarly, participation was significant, indicating that patients and the community engaged in training and resources. The active involvement of patients and the community in SCM-based prevention was also found to be significant, illustrating the direct experience and internalization of the SCM-based prevention concept. Perception further strengthened the evidence, demonstrating that patient and community perceptions contributed positively to the SCM-based prevention. Finally, patient and community satisfaction also exhibited a significant positive impact, indicating that the application of the principles of SCM-based prevention from the planning stage provided added value to satisfaction in a holistic therapeutic approach (Table 3).

Table 3. Results of hypothesis testing

Parameter	Original sample (O)	Sample (M)	Mean	T-Statistics (|O/STDEV|)	p-Value	Result
Value (X1)	0.352	0.2451	0.094	2.622	0.050	Accepted
Belief system (X2)	0.459	0.182	0.103	2.762	0.031	Accepted
Cooperation (X3)	0.399	0.257	0.077	2.519	0.027	Accepted
Participation (X4)	0.530	0.461	0.172	2.478	0.013	Accepted
Perception (X5)	0.469	0.268	0.075	2.872	0.031	Accepted
Satisfaction (X6)	0.669	0.388	0.079	2.882	0.027	Accepted

Discussion

This study aimed to analyze in depth the impact of SCM-based prevention implementation on patient and community awareness. The SCM to increase sustainability awareness in DHF prevention significantly enhanced patient and community awareness. SEM results indicated that all independent parameters—value (X1), belief system (X2), cooperation (X3), participation (X4), perception (X5), and satisfaction (X6)—had a significant positive influence on the outcomes. The high coefficient of determination demonstrated that the model could explain much of the variability in the results, indicating that the SCM-based prevention approach was not merely an additional intervention but a core component that could enhance patient and community awareness more effectively and sustainably. This finding was consistent with earlier studies, demonstrating that various aspects of social capital, aligned with the community's characteristics, have the potential to affect DHF management. Social capital is increasingly recognized as a clear target, a mediator, or an organizational factor at both the individual and community levels. Most interventions aimed to directly improve social capital to influence regulatory outcomes, program acceptance, and maintenance. Enhancing social capital was critical for overcoming barriers to successful community involvement, strengthening the role of DHF control, and sustaining long-term participation [28]. This was supported by other research conducted in Mexico, finding significant connections between social capital and several perceptions, including family, illness, individual, environment, and larva density.

There was a significant relationship between counselor perception, as well as dengue programs and family perspectives, with environmental involvement being the most influential element. Based on the route analysis for prospective regions, social capital was beneficial in raising the larval-free index through a family perspective. Ideally, the social capital strategy could be much more successful in increasing the number of free larvae indices through community interaction. In prospective regions, social capital was found to be more effective at increasing the larva index through human engagement. In endemic locations, dengue programs improved the larval index more efficiently than social capital. Enhancing social capital was important, as it effectively expanded the coverage of the larva index through environmental engagement in both sectors [29].

Slightly differing from the study in Ecuador, which identified key policy and management recommendations to guide the ongoing transition to decentralized dengue control programs in Ecuador and other dengue-endemic countries [30], the situation in the State of Minas Gerais, Brazil, demonstrated that the rise in dengue incidence is closely linked to areas with increased socioeconomic vulnerability and a higher number of working adults. Furthermore, the condition was more severe among those who self-identified as Black, elderly, and male. The findings of this study may be useful for health services in developing control and preventive measures for this issue, focusing on the most susceptible metropolitan regions and demographic categories [31]. However, in Australia, the socioeconomic impact of dengue necessitates a holistic approach that integrates public health measures with strategies to strengthen healthcare systems, improve sanitation infrastructure, and address social determinants of health [32].

There were still other documented incidents in Brazil. Recognition and understanding of the disease's spatial and temporal trends in the region aided in assessing the behavior of infections in high-risk areas, supporting targeted treatments and the allocation of resources for dengue control efforts. It was critical to support future research that assessed the disease's risk using quantitative data. Such research contributed to shaping health policies aimed at managing and preventing dengue, ultimately improving public health outcomes [33].

In comparison with other findings, geographic distribution and risk areas for disease transmission were identified across the state. These findings could assist in organizing long-term initiatives and implementing programmatic and/or governmental policies to limit dengue incidence in the community [34]. The relational aspects of scientific social capital, the intellectual component of institutional social capital, the connections and cognitive dimensions of market-based social capital, and the performance of innovation were all influenced by the structural and cognitive dimensions of technical social capital, the structural and relational dimensions of institutional social capital, and innovation performance.

In contrast to the results of the Florida study, finding strong agreement on core dengue prevention strategies, it also highlighted differences in preferences and priorities [35]. According to the innovation ecology approach, environmental dynamics positively influence the relationship between knowledge management capabilities and innovation performance. When environmental dynamics are stronger, knowledge management competence has a greater beneficial influence on innovation performance, and vice versa [36]. Information about health may help to transform beliefs, build social capital, and maintain a healthy home environment. It is critical to raise public knowledge and engagement in DHF management efforts [37].

In contrast to the satisfaction dimension, we emphasized significant relationships within the convenience, accessibility, and technical features of innovative green spaces, which lead to increased

ecological consciousness, deeper social relationships among people, and improved life satisfaction [38].

Conclusion

The SCM-based prevention approach significantly enhances awareness among both patients and the community simultaneously.

Acknowledgments: The author would like to thank the Primary Health Service of East Java for allowing the authors to analyze the data presented in this article.
Ethical Permissions: This research received ethical approval from the Health Research Ethics Commission of Universitas Noor Huda Mustofa, with No. EA/2392/KEPK-Poltekkes_Sby/V/2024.
Conflicts of Interests: There are no conflicts of Interests to declare.
Authors' Contribution: Yulianto B (First Author), Introduction Writer/Methodologist/Main Researcher (20%); Saadah N (Second Author), Assistant Researcher/Discussion Writer/Statistical Analyst (25%); Suhron M (Third Author), Statistical Analyst (15%); Prasetyo A (Fourth Author), Discussion Writer (20%); Khasanah U (Fifth Author), Assistant Researcher (20%)
Funding/Support: This study received funding from DIPA (Budget Implementation List) of the Surabaya Ministry of Health Polytechnic.

References

1- Yulianto B, Prasetyo A, Handoyo, Saadah N, Khasanah U. Social capital model to increase sustainability awareness in dengue fever (DHF) prevention with one house one mosquito net (GESARUSAJU) movement. Proceedings of the 7th International Conference on Health Polytechnic Surabaya. Surabaya: POLTEKKES KEMENKES Surabaya Indonesia; 2024. p. 16-23.
2- Da Conceição Araújo D, Dos Santos AD, Lima SVMA, Vaez AC, Cunha JO, Conceição Gomes Machado de Araújo K. Determining the association between dengue and social inequality factors in north-eastern Brazil: A spatial modelling. Geospat Health. 2020;15(1).
3- Nuddin A, Asiah N, Dangnga MS, Arsin AA, Yusriani, Handayani S. Institutional strengthening as an anticipatory measure for dengue virus transmission to reduce the incidence of dengue fever. ENFERMERÍA CLÍNICA. 2020;30(Suppl 2):424-8.
4- Pervaiz R, Aslam H, Sarwar T, Hafeez T, Rana M, Arif B, et al. Assessment of programs to control the endemic dengue fever: A literature review. Pak J Intensive Care Med. 2022;2022:13.
5- Siyam N, Hermawati B, Fauzi L, Fadila FN, Lestari N, Janah SU, et al. Eco-health survey effort to diagnose readiness for sustainability, dengue prevention and control. Int J Public Health Sci. 2023;12(2):898-908.
6- Santosa FJ, Setyowati R, Wibowo A. The social capital ability to communal cattle survive in rural of special region of Yogyakarta, Indonesia. Indones J Soc Res. 2023;5(2):168-80.
7- Lessa CLS, Hodel KVS, Gonçalves MS, Machado BAS. Dengue as a disease threatening global health: A narrative review focusing on Latin America and Brazil. Trop Med Infect Dis. 2023;8(5):241.
8- Shafique M. Effectiveness of positive deviance, a behavior change approach, to improve knowledge, attitude and practices on dengue prevention and control in selected slums in Islamabad, Pakistan: A mixed-method study [dissertation]. Bangkok: Chulalongkorn University; 2021.
9- Collins SP, Storrow A, Liu D, Jenkins CA, Miller KF, Kampe C, et al. Community knowledge, attitudes, and practices toward dengue prevention in Saint Lucia. Arizona State University. 2021.
10- Rakhmani AN, Zuhriyah L. Knowledge, attitudes, and practices regarding dengue prevention among health volunteers in an urban area-Malang, Indonesia. J Prev Med Public Health. 2024;57(2):176-84.
11- Arham AF, Amin L, Razman MR, Mahadi Z, Rusly NS, Mazlan NF, et al. Participatory: Stakeholder's engagement toward dengue control techniques in Klang Valley, Malaysia. Sage Open. 2021;11(1).
12- Zinszer K, Caprara A, Lima A, Degroote S, Zahreddine M, Abreu K, et al. Sustainable, healthy cities: Protocol of a mixed methods evaluation of a cluster randomized controlled trial for Aedes control in Brazil using a community mobilization approach. Trials. 2020;21(1):182.
13- Ghimire S, Singh DR. A qualitative exploration of community stakeholders perspectives on dengue outbreak management in urban Nepal: Navigational insights and challenges. Trop Med Health. 2025;53(1):77.
14- Monosov IE, Rushworth MFS. Interactions between ventrolateral prefrontal and anterior cingulate cortex during learning and behavioural change. Neuropsychopharmacology. 2022;47(1):196-210.
15- Wellman CL, Bollinger JL, Moench KM. Effects of stress on the structure and function of the medial prefrontal cortex: Insights from animal models. Int Rev Neurobiol. 2020;150:129-53.
16- Siyam N. The social capital of health cadres and community figures in overcoming DHF at endemic areas. Stud Ethno Med. 2022;16(1-2).
17- Ochola EA, Karanja DMS, Elliott SJ. Local tips, global impact: Community-driven measures as avenues of promoting inclusion in the control of neglected tropical diseases: A case study in Kenya. Infect Dis Poverty. 2022;11(1):88.
18- Zhang Y, Zahreddine M, Abreu K, Dantas MA, Charland K, Pierce L, et al. Knowledge, attitude and practice (KAP) and risk factors on dengue fever among children in Brazil, Fortaleza: A cross-sectional study. PLoS Negl Trop Dis. 2023;17(9):e0011110.
19- Chapman A. The influence of social capital on drought-caused climate change: Low-income farmer adaptation. SUURJ Seattle Univ Undergrad Res J. 2022;6:13.
20- Chaudhary MN, Lim VC, Faller EM, Regmi P, Aryal N, Mohd Zain SN, et al. Assessing the basic knowledge and awareness of dengue fever prevention among migrant workers in Klang Valley, Malaysia. PLoS One. 2024;19(2):e0297527.
21- Naing C, Htet NH, Tung WS, Aung HH, Whittaker MA. Facilitators and barriers to engaging communities in health service research on dengue control in Indo-Pacific region: A systematic review. BMC Public Health. 2023;23(1):1924.
22- Ozanne LK, Prayag G, Chowdhury M. Social capital and its psychological consequences on consumer resilience–a mediated moderation model. J Consum Aff. 2025;59(2):e70013.
23- Oliveira DVB, Da Silva JF, De Sousa Araújo TA, Albuquerque UP. Influence of religiosity and spirituality on the adoption of behaviors of epidemiological relevance in emerging and re-emerging diseases: The case of dengue fever. J Relig Health. 2022;61(1):564-85.

24- De Oliveira-Júnior JF, De Souza A, Abreu MC, Nunes RSC, Nascimento LDS, Da Silva SD, et al. Modeling of dengue by cluster analysis and probability distribution functions in the State of Alagoas in Brazilian. Braz Arch Biol Technol. 2023;66(1):e23220086.
25- Costa SDSB, Branco MDRFC, Vasconcelos VV, Queiroz RCS, Araujo AS, Câmara APB, et al. Autoregressive spatial modeling of possible cases of dengue, chikungunya, and Zika in the capital of Northeastern Brazil. Rev Soc Bras Med Trop. 2021;54:e0223.
26- Lee LQ, Teoh AP. ECO-Campus: A conceptual model unravelling determinants and perceived outcome of environmental management systems adoption in the Malaysian higher education industry. Glob Bus Manag Res. 2024;16(3):145-69.
27- Fournet N, Voiry N, Rozenberg J, Bassi C, Cassonnet C, Karch A, et al. A cluster of autochthonous dengue transmission in the Paris region-detection, epidemiology and control measures, France, October 2023. Euro Surveill. 2023;28(49):2300641.
28- Siyam N, Martini, Wahyuningsih NE, Adi MS. Social capital in dengue control. BIO Web Conf. 2024;133:00028.
29- Subaris H, Subiyanto S, Tri Kartono D, Lestary E. Social capital capacity as prediction of dengue control. Int J Public Health Sci. 2016;5(1):111.
30- Stewart Ibarra AM, Luzadis VA, Borbor Cordova MJ, Silva M, Ordoñez T, Beltrán Ayala E, et al. A social-ecological analysis of community perceptions of dengue fever and Aedes aegypti in Machala, Ecuador. BMC Public Health. 2014;14:1135.
31- Bohm BC, Morais MHF, Cunha MDCM, Bruhn NCP, Caiaffa WT, Bruhn FRP. Determining the relationship between dengue and vulnerability in a Brazilian city: A spatial modeling analysis. Pathog Glob Health. 2024;118(2):120-30.
32- Silburn A, Arndell J. The impact of dengue viruses: Surveillance, response, and public health implications in Queensland, Australia. Public Health Pract. 2024;8:100529.
33- Dos Santos Hage R, Bohm BC, Casagrande CP, Silva SCM, Soares AT, Lima JV, et al. Spatiotemporal expansion of dengue in Brazilian Amazon between 2001 and 2021. Sci Rep. 2025;15(1):1032.
34- Coutinho HS, Silva JO, Santana GBA, Do Carmo RF, Souza SO, De Faria MD, et al. Temporal trend, space risk and factors associated with the occurrence of dengue in northeast Brazil, 2009-2018. Trans R Soc Trop Med Hyg. 2022;116(9):853-67.
35- Tompkins HC. Community knowledge, attitudes, and practices toward dengue prevention in Saint Lucia [dissertation]. Arizona: Arizona State University; 2025.
36- Ding Y. Correlation analysis model of social capital and innovation performance based on knowledge mapping. Comput Intell Neurosci. 2022;2022:2138200.
37- Sukesi TW, Satoto TBT, Murhandarwati EH, Padmawati RS. Effects of health education based intervention on community's perception, healthy house, and social capital of dengue in endemic area of sleman regency Indonesia. Open Access Maced J Med Sci. 2021;9(E):428-36.
38- Li Y, Wu Y, Luo Y, Fu Z, Zhang S. The influence of smart green spaces on environmental awareness, social cohesion, and life satisfaction in high-rise residential communities. Buildings. 2024;14(9):2917.