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Effectiveness of Health Education on Self-care and Self-efficacy of Patients with Coronary Heart Disease: A Systematic Review

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Abstract

Background*: Coronary heart disease patients need educational interventions to improve self-care and self-efficacy. This research aims to synthesize the literature related to health education, focusing on self-care outcomes and self-efficacy in coronary heart disease patients.*
Methods: *The literature search used ScienceDirect, PubMed, Wiley Online Library, and Scopus. Keywords were combined using the Boolean "OR" and "AND" methods. The selection process included title and abstract screening, as well as full-text screening using Rayyan. Study quality was assessed using the Joanna Briggs Institute (JBI) Instrument.*
Results: *The literature selection process yielded 3,520 studies after eliminating duplicates, with 3,508 studies excluded based on title and abstract review. Five final studies were included in this review. The results indicated that various health education methods with different approaches contributed to improving the abilities of coronary heart disease patients.*
Discussion: *Diversified and Staged Health Education significantly improved self-care abilities. Meanwhile, eHealth Cardiac Rehabilitation and Workbook in Health Education were proven effective in improving the self-efficacy of coronary heart disease patients. The Problem-Based Learning educational approach had a positive impact on self-efficacy in the form of weight loss, body mass index, and increased HDL cholesterol levels. Various forms of health education for coronary heart disease patients are effective in improving self-care and self-efficacy, particularly interventions that are gradual, interactive, and actively involve the patient.*
Conclusion: *The Diversified and Staged Health Education methods effectively improve self-care, while eHealth Cardiac Rehabilitation and Workbook in Health Education have been shown to improve self-efficacy. Nurses need to actively involve patients in the health education process to improve self-care and self-efficacy in patients with coronary heart disease.*

Keywords: Coronary heart disease, Health education, Self-care, Self-efficacy

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INTRODUCTION

Self-care and self-efficacy are key pillars in preventing the worsening of heart disease through the ability to manage daily activities, lifestyle, and risk factors, as well as recognizing signs and symptoms (Bassola, Cilluffo, Di Matteo, Bolgeo, Simonelli, Dal Molin, et al., 2025; Mohamad, Mulud, Chan, Razak, & Esa, 2025). Every year, there is an increase of approximately one million people suffering from coronary heart disease, leading the World Health Organization to advocate greater attention to self-care as a global priority (Tsao, Aday, Almarzooq, Alonso, Beaton, Bittencourt, et al., 2022; World Health Organization, 2022). Self-care refers to everyday actions to reduce complications (Abdelhameed & Nemer, 2022), but patients with coronary heart disease often do not achieve optimal self-care due to age and comorbidity burden, leading to relapses, increased mortality, and 30-day readmissions (Di Matteo, Bolgeo, Dal Molin, Bassola, Lusignani, Maconi, et al., 2025).

Studies (Marinho, Gomes, da Silva Junior, & Schwingel, 2023) show that poor self-care increases the risk of death one year after hospitalization, as proven by 20% of coronary heart disease patients being readmitted within 30 days. Meanwhile, previous research (Leutualy, Trisyani, & Nurlaeci, 2021), suggest that communication via SMS and telephone can help improve behavior and impact the progression of coronary heart disease. Furthermore, physical activity and patient self-efficacy significantly influence each other (Pahria, Pitora, & Afirmasari, 2022). Self-efficacy in self-care is crucial for those with coronary heart disease because it helps reduce recurrence (Sugiharto, Ubleeuw, Masala, Noya, Latuheru, Abdullah, et al., 2024).

Positive emotions and important elements influence self-efficacy in achieving desired outcomes and contribute to therapy adherence (Liu, Liu, Su, Gao, Dong, Lyu, et al., 2023). However, low self-confidence in managing heart health has a negative impact on self-management skills (Kurniastining Fiqriyah & Hudiyawati, 2023). Research (Sugiharto, Haroen, Alya, Jamlaay, Mai, Abdillah, et al., 2024) shows that booklets have been shown to increase self-efficacy in patients with coronary heart disease. Meanwhile, other health education media also have the potential to change patient behavior, such as peer education (Weddell, Shi, Redfern, Buckley, & Gallagher, 2025) and e-learning using social media platforms (Ebrahim El. Tahry, Anwar Aly, Abd El Reheem Abd El Reheem Abd El Reheem, Elsayed Mosaad Mohammed, & Mohammed Ibrahim Ibrahim, 2022). Efforts to empower and manage health conditions require appropriate education strategies to effectively convey information and achieve goals (Zhou, Qian, Zhang, Xu, Yuan, Tian, et al., 2024).

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Patients who participate in health education programs demonstrate a greater capacity for optimal self-care (Svavarsdóttir, Halapi, Ketilsdóttir, Ólafsdóttir, & Ingadottir, 2023; Yu, Li, Li, Smith, Yue, & Yan, 2022). However, to date, no synthetic effect of health education interventions on self-care and self-efficacy in patients with coronary heart disease has been found. A systematic review is necessary to summarize the current research on the effects of health education on enhancing the health of patients with coronary heart disease. The purpose of this review is to synthesize existing research related to health education outcomes on self-care and self-efficacy in patients with coronary heart disease.

METHODS

The study adheres to the PRISMA 2020 (Preferred Reporting Items for Systematic reviews and Meta-Analyses). This systematic review has been registered with PROSPERO (CRD42025626883). Searches were conducted in the ScienceDirect, PubMed, Wiley Online Library, Scopus databases. Keywords were combined "OR" and "AND" to develop a comprehensive search strategy limited to English-language articles. Only studies that met the inclusion criteria were included in this systematic review. The initial search was conducted in May 2025, so the database update was carried out in October 2025.

Inclusion criteria were (1) patients with a diagnosis of coronary heart disease, (2) telehealth, book, literacy-based education, (3) control group and intervention group, (4) outcome self-care or self-efficacy, (5) Randomized Controlled Trials (RCT) design studies, Quasi-Experimental, (6) articles in English. Exclusion criteria: very heterogeneous population (patients with other heart diseases), protocol, observational, cross-sectional, review, and qualitative studies. The study selection process was carried out independently by screening the title and abstract, as well as full-text screening using Rayyan by two reviewers.

Two reviewers independently assessed the quality of included studies using the Joanna Briggs Institute Instrument (Barker, Stone, Sears, Klugar, Tufanaru, Leonardi-Bee, et al., 2023). Each critical appraisal tool criterion was rated "yes," "no," "unclear," or "not available" by the reviewer for each study (Table 1).

Data findings were taken through included studies by two reviewers. The following information was collected for each included study: authors, year of publication, country/ setting, study design, population, sample, intervention, outcome measures, and research results* (Table 3). Disagreements were resolved through discussion with other reviewers. Research findings show varied interventions or high heterogeneity, so the findings do not allow for quantitative analysis or meta-analysis.

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RESULTS

The selection process was carried out during the literature search, obtained from the database search results. A total of 3,520 studies were obtained after removing duplicates, and 3,508 of them were excluded after reviewing the titles and abstracts. Five studies were excluded after full-text evaluation, namely Research protocol (1), Qualitative (1), Observational study (1), cross-sectional (1), and Measurement tool (1). In May 2025, we conducted an assessment of 7 studies based on the established criteria and excluded 2 studies due to their non-open-access nature. However, we conducted another database search and selection process as a database update in October 2025, with a total of 3 studies assessed. We excluded 3 studies due to irrelevant outcomes, qualitative issues, and non-compliance with the inclusion criteria. Thus, 5 studies were included in the systematic review (Figure 1).

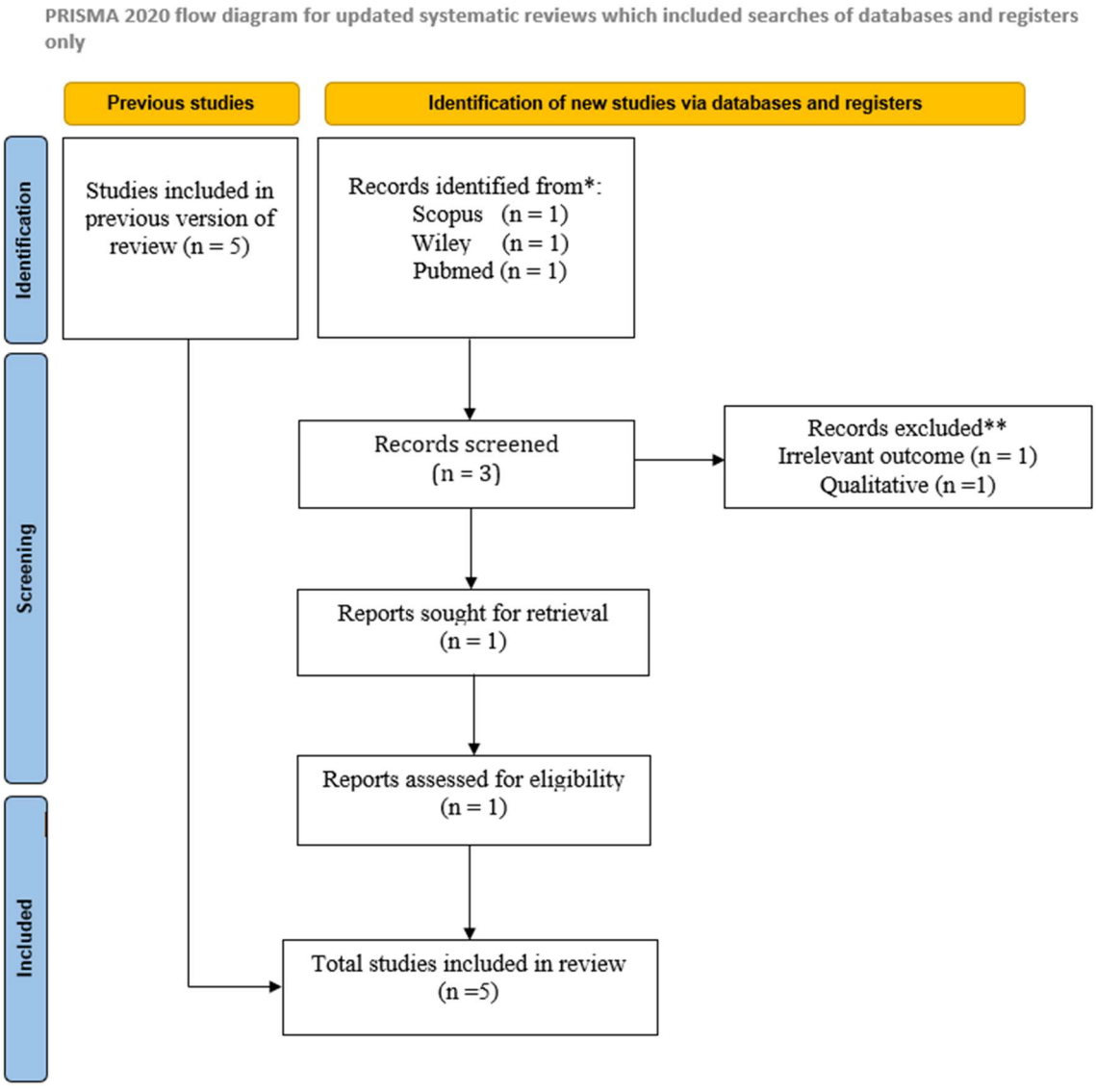

Figure 1. PRISMA Diagram

Based on the Joanna Briggs Institute Instrument, the quality scores of included studies were in the range of 85% -100%, with a maximum score of 100%. No disagreement was found between the authors (Table 1).

Table 1. Quality assessment of included studies

Quality assessment : quasi experimental studies	Nur'Aeni, A., dkk (2019)
1. There are 'causes' and 'effects'	v
2. Is there a control group	v
3. Participants include similar comparisons	v
4. Participants in the comparator who received treatment	v
5. Any outcome measurements	v
6. Results of participants included in the comparison	v
7. Measurements are conducted using valid procedures	v
8. Follow-up completed	v
9. Statistical analysis is appropriate	v
Percentage Category	100 % (H)

Quality assessment: RCT	Kohler AK, dkk (2020)	Wong, E.M.-L., dkk (2020)	Shan, Z., dkk (2020)	Su, Jing Jing, dkk (2021)
1. Randomization for participant assignment	Y	Y	Y	Y
2. Allocation hidden	Y	Y	N	Y
3. The initial similar treatment	Y	Y	Y	Y
4. Participants not aware of the assignment	Y	Y	Y	Y
5. The person providing care does not know the assignment	Y	Y	Y	Y
6. Treatment groups were treated identically	Y	Y	Y	Y
7. Raters don't care about the assignment	N	Y	N	Y
8. Outcomes were measured in the same way for the treatment group	Y	Y	Y	Y
9. Outcomes are measured in a reliable way	Y	Y	Y	Y
10. Follow-up performed in full	Y	Y	Y	Y
11. Participants were analysed in groups	Y	Y	Y	Y
12. Statistical analysis is appropriate	Y	Y	Y	Y
13. Trial design appropriate	Y	Y	Y	Y
Percentage Category	92 % (H)	100 % (H)	85 % (H)	100 % (H)

Note:
Quality scoring results with the JBI Critical Appraisal Checklist. The question with answers"Y"referred to"yes","N"referred to"no". A total score more than 80% was considered high quality (H), 60-80% was considered medium quality (M); and less than 60% was considered low quality (M) (Mostafaei, Sadeghi-Bazargani, Hajebrahimi, Salehi-Pourmehr, Ghojazadeh, Onur, et al., 2020).

Of the five participating journals, namely Diversified and Staged Health Education,* Workbook in Health Education, eHealth Cardiac Rehabilitation, Problem-Based Learning, and Web-Based Education. Each study showed varying intervention durations, ranging from several months to a year. No disagreement was found between the authors (Table 2).

Table 2. Data extraction

No.	Authors and Year	Country, setting	Methods	Population & Sample	Intervention	Research results and measurement
1.	Shan et al. (2020)	Tiongkok, in the Department of Traditional Chinese Medicine (TCM) and Integrated Western Medicine	RCT	Population 180. Intervention = 90, control = 90	The intervention was conducted in phase 1 (active members spoke with participants and then provided information about coronary heart disease), phase 2 (patients reviewed the material studied), and phase 3 (patient knowledge acquisition). Control participants received their usual care, but the duration of the education was not specified. The intervention was conducted between January 2018 and December 2019 by doctors and nurses (questionnaires).	**Diversified and staged health education with self-care** showed that the mastery score of health knowledge about self-care skills in the study group significantly increased in the intervention group compared to the control group ($P<0.05$).
2.	Nur'Aeni et al. (2019)	Indonesia, Cardiac intensive care unit	Quasi-experiment	Population 37. Intervention = 18, control = 19	A health education intervention was administered to patients as respondents, with post-tests administered twice, one month after the pre-test. After respondents from both patient groups were discharged from the ward, self-efficacy measurements were conducted by telephone during the post-test. The group receiving standard care received direct health education, conducted by nurses or doctors, for two months (questionnaires).	**Workbook in health education with self-efficacy** showed that indicated an increase in self-efficacy in both posttest 1 and posttest 2. Comparison of self-efficacy in pretest, posttest I, and II between and within groups obtained p values = .732, .220, and .009, respectively.
3.	Su & Yu (2021)	Tiongkok, Cardiology Unit at Hospital	RCT	Population 146. Intervention = 73, control = 73	The intervention in participants receiving NeCR showed an average website visit rate of 8.64 (SD = 1.53) times over 12 weeks, with interactive activities via WeChat attended by 52 participants, an average of 6.12 (SD = 1.05) times during the intervention period (questionnaire).	**eHealth cardiac rehabilitation with self-efficacy** showed significant changes in self-efficacy ($\beta = 0.61$, $p = 0.005$) compared to the group without special treatment at the end of the study.
4.	Kohler et al. (2020)	Southeast Sweden, in Primary Health Care	RCT	Population 157. Intervention = 79, control = 78	The intervention consisted of 13 scheduled meetings, one each in weeks 1, 2, 3, 4, 6, 8, 10, 12, 16, 20, 26, 39, and 52. Each meeting lasted 2 hours. The control group received a patient information brochure mailed to their home address. This activity was carried out for one year by the nurses (questionnaire).	**Problem-based learning with self-efficacy** showed that comparisons between groups did not produce statistically significant differences.

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5.	Wong et al. (2020)	Hong Kong, at the Heart Clinic.	RCT	Population 438. Intervention = 219, and control = 219	A 20-minute individual educational intervention taught patients how to use the eHES website. The control group received conventional care. This care was administered over 6 months by trained research nurses (questionnaires)	**Web-based education with self-efficacy** showed that self-efficacy was not significant at T2 and T3, namely: a. T2 (3 months): p-value = 0.17 with Cohen's d = 0.11 b. T3 (6 months): p-value = 0.90, with Cohen's d = -0.02 This indicates that the changes were independent of the type of intervention provided.

The five participating journals showed variations in intervention methods and duration. The Diversified and staged health intervention studied by Shan et al. (2020) significantly improved self-care for coronary heart disease patients ($p<0.05$), while the Workbook in health education intervention by Nur'Aeni et al. (2019) showed an increase in self-efficacy (p-value 0.009). Furthermore, the eHealth cardiac rehabilitation method by Su & Yu (2021) found a statistically significant change in self-efficacy ($\beta = 0.61$, $p = 0.005$). In contrast, the Problem-based learning intervention conducted by Kohler et al. (2020) did not show significant effectiveness in improving self-efficacy. However, the study did show positive effects in the form of weight loss, increased Body Mass Index (BMI), and increased HDL cholesterol levels. The intervention by Wong et al. (2020) using the Web-based education method, did not show an increase in effectiveness in self-efficacy of coronary heart patients (p-value = 0.17 and 0.90).

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DISCUSSION

Systematic reviews, based on their characteristics, were mostly conducted in developing countries, namely China (two studies) and Indonesia (one study). Meanwhile, studies conducted in developed countries included Hong Kong (Asia) and Sweden (Europe), each with one study. The findings identified existing studies related to health education that examined outcomes on self-care and self-efficacy in patients with coronary heart disease. The study revealed a method that can significantly improve self-care, namely, Diversified and Staged Health Education by Shan et al. (2020). The study describes the stages of the intervention, involving active patient interaction in the process of increasing knowledge, assessing the effects of education, and emphasizing the importance of self-care, both face-to-face and through WeChat groups, thus contributing to improving self-care abilities in coronary heart disease patients.

According to previous research (Gomes & Reis, 2019) a systematic and structured educational program strengthened the skills of patients with acute coronary syndrome. Both interventions exhibit similar stages, thus improving self-care. The initial stage is providing information and knowledge, followed by an educational video. The final stage is understanding the urgency of self-care and active information exchange via a mobile app, which allows for abnormality detection and effective intervention to prevent complications. This aligns with research (Nurati, Allenidekania, Waluyanti, & Rizany, 2024; Sandberg, Ravn-Fischer, Johnsson, Lachonius, & Bäck, 2024; Yang, Gao, Huang, Wang, Han, Wu, et al., 2025), which states that digital information and communication technologies that integrate practices through digital, innovative, and collaborative resources have proven effective as information sources, thereby increasing self-awareness about healthy lifestyles, reducing mortality, and suffering. In this approach, patients must use their ability to evaluate information well and make informed decisions about treatment and disease prevention (Lu, Luo, Guan, Zhang, Jia, & Wan, 2025).

Other findings indicate that the Workbook in Health Education by Nur'Aeni et al. (2019) is significantly effective in increasing self-efficacy in coronary heart disease patients. The research intervention involved learning and self-management implemented at home, guided by the guidelines for managing coronary heart disease patients, and supplemented with daily implementation notes that must be completed by patients at home. Similar findings indicate that interventions using the workbook method in the acute phase and two weeks after a heart attack also resulted in increased self-efficacy in managing symptoms, medication, and lifestyle changes (Shi, Ghisi, Zhang, Hyun, Pakosh, & Gallagher, 2023). A self-help guidebook for

home cardiac rehabilitation supports increased self-care activities while helping reduce risk factors, thus contributing to achieving the goals of cardiac rehabilitation: reducing morbidity, mortality, and readmission rates. By consistently adopting a healthy lifestyle, patients can also play a role in preventing coronary heart disease (Damluji, Tomczak, Hiser, O'Neill, Goyal, Pack, et al., 2025; Zaree, Dev, Yaseen Khan, Arain, Rasool, Khalid Rana, et al., 2023).

Another method that can improve self-efficacy is eHealth Cardiac Rehabilitation by Su & Yu (2021). The study described the intervention as being delivered through active interaction on WeChat. This approach comprehensively integrates information resources, motivation, lifestyle monitoring, and interaction, which can help patients gain knowledge about coronary heart disease management and monitor goal achievement as part of health behavior change efforts. This is in line with research (Candelaria, Kirkness, Bruntsch, Gullick, Randall, Ladak, et al., 2023), which reported that the impact of implementing digital cardiac rehabilitation can improve cardiac self-efficacy. This statement is reinforced by previous findings (Liang, Liu, Shi, Jiang, Zhang, Liu, et al., 2022) that digital education, reminder features, and family support can increase patient engagement in adherence. Other studies have shown that cardiac telerehabilitation, allowing patients to undergo rehabilitation at home for ≥6 months, can improve health and quality of life and be cost-effective (Dibben, Faulkner, Oldridge, Rees, Thompson, Zwisler, et al., 2023; Zhong, Liu, Cheng, Xu, Wang, He, et al., 2023).

12 A method that did not show significant effectiveness in improving self-efficacy in patients with coronary heart disease was Problem-Based Learning by Kohler et al. (2020), in which heart patients selected their learning materials based on their preferences. Consequently, patients overestimated their self-reported activity levels. However, this study found positive effects in the form of weight loss, increased body mass index (BMI), and increased HDL cholesterol levels. Meanwhile, findings (Andreae, Tingström, Nilsson, Jaarsma, Karlsson, & Kärner Köhler, 2023) showed that a one-year problem-based learning intervention in heart patients had positive improvements in patient empowerment, nutritional status, and cholesterol levels. Empowerment enhancement focuses on patient behavioral strategies. However, another study (Mohamed, Hafaz, Elsayed, & Mohammad, 2024) reported that the Learning-Based Program was beneficial in motivating patients, thereby increasing self-efficacy for heart patients.

Another method that did not show an increase in effectiveness on self-efficacy was Web-Based Education by Wong et al. (2020). The intervention taught heart patients how to use the eHES website. However, because patients were unfamiliar with computers or came from

disadvantaged backgrounds, this method was ineffective in improving heart patients' self-efficacy. Different findings reported that a two-week web-based educational intervention involving visual, auditory, and kinesthetic learning had a positive effect on self-efficacy in cardiac patients (Vatmasari, Putra, & Windarwati, 2025). This finding is in line with previous research (Rahmat, Syafiih, & Faid, 2023), which showed that website use was proven to significantly improve patient knowledge and contribute to the prevention and management of heart disease. The heterogeneity of intervention methods limited this review, preventing direct comparison of results. Furthermore, primary research on interventions for coronary heart disease patients that emphasize self-care and self-efficacy outcomes is still scarce.

CONCLUSIONS

This systematic review indicates that various health education interventions have demonstrated effectiveness and contributed to improving the abilities of patients with coronary heart disease. Diversified and Staged Health Education demonstrated significant effectiveness in improving self-care skills, and eHealth Cardiac Rehabilitation was shown to increase self-efficacy. Both interventions share a similar emphasis on active patient involvement through active interaction. Both interventions share a similar emphasis on active patient involvement through active interaction. Furthermore, the Workbook in Health Education also significantly increased self-efficacy through patient learning and self-monitoring based on guidance and daily home diaries. Although the Web-Based Education approach did not show any improvement, the Problem-Based Learning method for increasing self-efficacy showed a positive impact and influenced body weight, nutritional status, and cholesterol levels. Therefore, further longitudinal studies are needed, focusing on interventional studies related to health education on self-care and self-efficacy for coronary heart disease patients, emphasizing active patient involvement in the educational process and the integration of technological advancements to achieve optimal health.

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