

Preplanned Studies

Evaluation of China Healthy Lifestyle for All Interventions Based on RE-AIM Framework — China, 2007–2020

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Summary

What is already known about this topic?

Since the launch of China Healthy Lifestyle for All (CHLA), each action area has been evaluated at the local level and effective results have been achieved in most areas.

What is added by this report?

Based on the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) model, the study found that there is an imbalance in the development of CHLA, and some of the action goals and indicators are not satisfactory.

What are the implications for public health practices?

A national action evaluation index system should be built to ensure the sustainability and scientific nature of this strategy. In addition, the government needs to attach great importance to CHLA to effectively help residents take health actions.

Overall, 7 of the top 10 fatal diseases in the world are chronic noncommunicable diseases (NCDs) (1). Approximately 89% of deaths in China were attributed to NCDs in 2018 (2). In order to mitigate the effects of NCDs in China, it is necessary to establish a system for comprehensive NCDs control, carry out comprehensive health education and promotion, and advocate the adoption of a healthy lifestyle by the public (3). Therefore, multiple national departments launched the China Healthy Lifestyle for All (CHLA) campaign to promote and disseminate information on a healthy lifestyle, promote technical measures and support tools, and carry out various national activities in 2007. To evaluate the implementation and intervention of CHLA, we applied the RE-AIM model (4). Overall, the CHLA has shown an upward growth trend and actions taken under the CHLA in multiple domains have shown great progress. To further promote the CHLA, measures were tailored to local conditions.

This study contains a literature review, systematic

review, and meta-analysis and applied the RE-AIM model to evaluate the process and results of the CHLA project. The relevant literature was retrieved from both Chinese and English databases as well as other publicly available platforms, including the VIP Chinese Journal Service Platform, the China National Knowledge Infrastructure (CNKI), and the United States National Library of Medicine (PubMed) with the key words of CHLA and its related activities. A mixed research approach combining qualitative and quantitative methods was used to collect and analyze the data. Annual progress data for CHLA comes from the work information management system of CHLA, which includes CHLA activities' data from 31 provincial-level administrative divisions (PLADs) and Xinjiang Production and Construction Corps (XPCC) in the mainland of China. The evaluation dimensions are described in Table 1.

In the “Reach” dimension, the coverage and mass participation in the CHLA actions were shown in Table 2. In our study, up to December 31, 2015, a total of 2,507 counties (districts) across the country had launched the CHLA, a launch rate of 80.90%. Up to December 31, 2020, a total of 2,817 counties (districts) across the country had launched the CHLA action, a launch rate of 95.20%. The rates in the eastern, central, and western regions were 97.36%, 97.73%, and 91.36%, respectively. The launch rate of each region has increased in the two phases with the fastest expansion in the western region. In general, the launch rate of the western region, as compared with the eastern and central regions, was still at a low level.

In the “Efficacy” dimension, the CHLA action had achieved a remarkable intervention effect. In 2012, the National Action Office carried out a nationwide assessment of the CHLA, which mainly assessed its five aspects, including “awareness of the CHLA action,” “awareness of healthy lifestyles,” “awareness of health knowledge,” “use of health support tools,” and “changes in lifestyle and behavior.” It has been documented that specific knowledge on a healthy lifestyle, such as the recommended level of physical activity, recommended intake of oil and salt, and

TABLE 1. RE-AIM evaluation dimensions.

Dimension	Definition	Index
Reach	Obtain service propagation or effective coverage	Coverage and mass participation
Efficacy	Behavioral consequences of intervention	Awareness rate, utilization rate of health tools, changes in life behavior; mass satisfaction
Adoption	Organizational support and participation in policy implementation	Departments involved in the action
Implementation	Whether the implementation is carried out as planned, the content and depth of implementation; the compliance of the participants	The construction of propaganda and education activities, training activities and health support environment
Maintenance	The extent to which the action is maintained or institutionalized (policy, legislation)	Measures to ensure the sustainability of the action

Abbreviation: RE-AIM=reach, efficacy-adoption, implementation, maintenance.

TABLE 2. Launch of CHLA in the eastern, central, and western regions.

Region	Phase 1			Phase 2		
	Number of counties (districts) under their jurisdiction	Number of counties (districts) launching CHLA	Proportion (%)	Number of counties (districts) under their jurisdiction	Number of counties (districts) launching CHLA	Proportion (%)
Eastern region	912	849	93.09	909	885	97.36
Central region	922	888	96.31	927	906	97.73
Western region	1,265	770	60.87	1,123	1,026	91.36
Total	3,099	2,507	80.90	2,959	2,817	95.20

Note: For phase 1: Data was updated on December 31, 2015; for phase 2: Data was updated on December 31, 2020.

Abbreviation: CHLA=China Healthy Lifestyle for All.

parameters for a healthy Body Mass Index were higher in the action groups than in the non-action groups, and higher in urban than rural populations (5). In addition, the proportion of conscious control of oil and salt intake in urban and rural action groups was higher than that in non-action groups (5). In this study, according to the inclusion and exclusion criteria, 42 pieces of literature (47 studies) were included in the meta-analysis. The results showed that the CHLA was effective. See Table 3 for the results on lifestyle and behavior changes in the CHLA action group and the control group. In addition, it was notable that the CHLA was well accepted across the country. For example, in 2014, Shanghai carried out an evaluation of the effect of the yearly distribution of health gift packages to the city's residents as part of the CHLA action, showing 82.1% satisfaction.

In the "Adoption" dimension, many departments were involved in the action. The first phase of the CHLA was jointly initiated by three departments and the second phase was jointly managed by five ministries and commissions. In light of local conditions and the advantages of multi-department collaboration, a working mechanism for the CHLA has been gradually formed under the leadership of the government and with the participation of various departments. For example, the Chongqing Municipal Education Commission, market regulatory departments, sports departments, municipal

governments, propaganda unions, and other relevant departments actively issued policy documents conducive to the control of risk factors related to chronic NCDs.

In the "Implementation" dimension, the corresponding results were shown in Table 4. Increasing trends were seen in the number of trainees, on-site activities, health lectures, and so on since the launch of the CHLA actions in the eastern, central, and western regions. In the first phase of CHLA implementation, the eastern region made progress in all areas, while the western region lagged behind. In the second phase, progress was made in all regions.

In the "Maintenance" dimension, central and local governments took many measures to ensure the sustainability of the CHLA actions. For example, Shandong Province brought salt reduction interventions under the provincial basic public health service projects and grassroot medical and health service institutions carried out salt reduction interventions and follow-up for residents in areas under their jurisdiction. In addition, since the launch of the CHLA, many technical programs have been released, such as the Overall Program of Action on Healthy Lifestyles for All (2007–2015), the Implementation Program for Healthy Lifestyle Instructors, the Action Program on Healthy Lifestyles for All (2014–2025), and so on. These actions have also been incorporated into policy documents such as the Performance

TABLE 3. Meta-analysis of the behavior changes in the CHLA action group and the control group.

Item	Region	Quantity of study	RR (95% CI)
Conscious control of salt intake	Eastern region	12	1.43 (1.22, 1.68)
	Central region	2	1.83 (0.85, 3.94)
	Western region	5	1.17 (1.13, 1.23)
	Total	19	1.39 (1.25, 1.54)
Conscious control of edible oil intake	Eastern region	12	1.59 (1.30, 1.94)
	Central region	2	1.89 (0.86, 4.13)
	Western region	5	1.24 (1.13, 1.36)
	Total	19	1.50 (1.32, 1.70)
Conscious control of body weight	Eastern region	11	1.51 (1.23, 1.86)
	Central region	2	1.36 (0.57, 3.23)
	Western region	5	1.23 (1.16, 1.30)
	Total	18	1.40 (1.23, 1.59)
Daily intake of fresh fruits	Eastern region	3	1.27 (0.89, 1.81)
	Central region	1	1.52 (1.43, 1.61)
	Western region	5	1.36 (1.08, 1.70)
	Total	9	1.35 (1.16, 1.57)
Daily intake of fresh vegetables	Eastern region	3	1.16 (1.06, 1.27)
	Central region	1	1.59 (1.52, 1.67)
	Western region	5	1.34 (1.15, 1.57)
	Total	9	1.31 (1.16, 1.49)

Abbreviations: CHLA=China Healthy Lifestyle for All; RR=relative risk; CI=confidence interval.

TABLE 4. CHLA Progress in the eastern, central, and western regions.

Item	Phase 1				Phase 2			
	Eastern region	Central region	Western region	Total	Eastern region	Central region	Western region	Total
Number of trainees	330,685	290,642	205,563	826,890	531,459	518,130	1,128,370	2,177,959
Number of on-site activities and health lectures	42,668	23,968	20,653	87,289	98,224	57,424	60,661	216,309
Frequency of media coverage	11,728	9,943	5,453	27,124	26,426	22,869	15,676	64,971
Supportive environment*	24,171	10,305	6,480	40,956	42,463	22,001	14,532	78,996
Smoke-free environment	17,690	7,942	6,544	32,176	21,420	12,643	11,047	45,110
Ten minutes of physical exercise at schools	1,063	843	383	2,289	1,388	1,058	621	3,067
Healthy lifestyle instructors	126,339	74,025	44,040	244,404	362,726	222,042	214,209	798,977

Abbreviation: CHLA=China Healthy Lifestyle for All.

* There are nine main environments for health-oriented interventions: communities, public institutions, schools, canteens, restaurants (hotels), footpaths, cabins (gas stations), streets, and theme parks.

Evaluation Standard for Disease Prevention and Control (2012), the Outline of the “Healthy China 2030” Plan, and China’s Mid-and Long-term Plan for the Prevention and Treatment of Chronic Diseases (2017–2025) and so on.

DISCUSSION

China’s top legislature approved the country’s 14th

Five-Year Plan, the blueprint for high-level development for the next five years, and pointed out the need to “fully implement the healthy China Action.” Therefore, we applied the RE-AIM model to evaluate the actions to provide scientific advice for the formulation of population-based risk reduction strategies for chronic NCDs for the 14th Five-Year Plan.

In this study, the launch rate of the CHLA showed

an upward trend in adoption at the county level. However, due to the vast differences in the level of economic growth among different regions, the development of CHLA was not balanced. Compared with the eastern and central regions, the start-up rate in the western region was the lowest. As for the progress on the actions themselves, the eastern region was generally in a leading position, while the western region was relatively slow. This suggests that the actions can be carried out by level management in the future (6). The Health Literacy Monitoring Report of Chinese Residents 2012–2020 showed that among the 3 aspects of health literacy levels, healthy lifestyle and behavioral literacy had the fastest average growth rate. Among the literacy levels of six types of health problems, NCDs prevention and control literacy had the fastest average growth rate. These metrics indicate the success of the CHLA. However, some of the CHLA's goals and indicators have not been satisfactory. For example, the rate of obesity among urban and rural residents of all ages in China has been rising, with more than half of the adult residents being either overweight or obese (7). It is worth noting that the rate of being overweight or obese among 6- to 17-year-old children and adolescents is 19% (7). These problems indicate that the development of a healthy lifestyle requires continuous efforts and attention to all stages of the life cycle (8). Overall, it is important for the government to formulate strategies and measures with sustainable plans for their ensured and continued implementation.

Since the CHLA was launched in 2007, only one effective evaluation had been carried out nationwide in 2012. There had also been some evaluations in some PLADs, but the evaluation methods and content design varied. Since the initiation of the CHLA action, no scientific, comprehensive, and systematic evaluation has been conducted on the application of health-supported environments nor on the settings and work of healthy lifestyle instructors. In order to ensure the sustainability and scientific nature of this strategy, it is recommended that an action evaluation index system is developed, standardized, and adopted for the evaluation of content and implementation of the CHLA actions as soon as possible for regular evaluations.

This study was subject to several limitations. First of all, this study used publicly available data. Therefore, no unreleased or non-published data was included. Second, CHLA is a population-based intervention for NCDs in China. Therefore, it is unable to be used to develop scientific recommendations and strategies for individual-based intervention.

In the future, with improved strategies and more

attention from the government, national healthy lifestyle actions can be effectively promoted, helping residents demonstrate the concept of “taking the first responsibilities for their own health.”

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