Indices/Indicators Developed to Evaluate the “Creating Supportive Environments” Mechanism of the Ottawa Charter for Health Promotion: A Setting-Based Review on Healthy Environment Indices/Indicators

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This study aimed to identify the indices/indicators used for evaluating the “creating supportive environments” mechanism of the Ottawa Charter for Health Promotion, with a focus on built environments, in different settings. A search for literature with no time limit constraint was performed across Medline (via PubMed), Scopus, and Embase databases. Search terms included “Ottawa Charter,” “health promotion,” “supportive environments,” “index,” and “indicator.” We included the studies conducted on developing, identifying, and/or measuring health promotion indices/indicators associated with “built environments” in different settings. The review articles were excluded. Extracted data included the type of instrument used for measuring the index/indicator, the number of items, participants, settings, the purpose of indices/indicators, and a minimum of two associated examples of the indices domains/indicators. The key definitions and summarized information from studies are presented in tables. In total, 281 studies were included in the review, within which 36 indices/indicators associated with “built environment” were identified. The majority of the studies (77%) were performed in developed countries. Based on their application in different settings, the indices/indicators were categorized into seven groups: (1) Healthy Cities (n=5), (2) Healthy Municipalities and Communities (n=18), (3) Healthy Markets (n=3), (4) Healthy Villages (n=1), (5) Healthy Workplaces (n=4), (6) Health-Promoting Schools (n=3), and (7) Healthy Hospitals (n=3). Health promotion specialists, health policymakers, and social health researchers can use this collection of indices/indicators while designing/evaluating interventions to create supportive environments for health in various settings.

Keywords: Ottawa Charter; Indicator; Index; Health Promotion; Supporting Environments

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INTRODUCTION

The environment where individuals and populations live affects their health. The World Health Organization (WHO) estimated that 23% of worldwide mortalities result from modifiable environmental factors. Health can be influenced by built environments, either directly in the form of immediate impact (e.g., indoor environmental quality effects) or indirectly through changing behaviors that may affect health (e.g., increasing physical activity by encouraging walking). Effective measures related to the prevention and control of diseases are taken, given the multilayered physical, social, and economic context of the built environments.

According to the principles set out in the Geneva Charter, “well-being societies provide the foundations for all members of current and future generations to thrive on a healthy planet, no matter where they live.” Focusing on the settings of everyday life, the Ottawa Charter and the Sundsvall Statement emphasized settings as a socio-ecologic concept. WHO defines a setting as “the place or social context in which people engage in daily activities in which environmental, organizational, and personal factors interact to affect health and well-being.” As supportive environments, health-promoting settings can be achieved through complex processes requiring substantial proficient support.

A core action area of the Ottawa Charter is “creating supportive environments for health.” The charter focuses on the socio-ecological requisites for health promotion and calls for joint actions at the individual, community, and societal levels. Undeniable connections between human health and the environment constitute the foundation of a socio-ecological approach to health. According to evidence, the effectiveness and efficiency of health promotion programs could be guaranteed by adopting the mechanisms of the charter, which have not been implemented in health systems as intended. Appropriate evaluation strategies are required to collect evidence on the effectiveness of the programs, recognize strategies to promote the programs and their associated activities, legitimize the use of resources, and recognize unexpected consequences. Hence, to evaluate any health promotion intervention effort, there is a great requirement for a comprehensive set of indices/indicators.

As measurable information, indices/indicators provide the possibility of determining the level of program accomplishment and the level of outcome achievement. Indices/indicators are not only useful in identifying the details of how the program operates and/or makes changes but also helpful in recognizing how such changes occur. Indices are a set of compound or composite indicators, meaning an index may comprise a series of different indicators. For example, the Health-Promoting Behaviours Composite Index includes self-reported data on physical activity, healthy eating, changes to improve health, and so on. The indicators may be measured qualitatively and quantitatively to assess the level of changes made.

Existing literature on health promotion demonstrates poor and insufficient evaluation planning of health promotion programs, possibly due to the lack of knowledge regarding the most appropriate indicators/indices in this area. Moreover, there is a scarcity of studies on introducing and categorizing the indices/indicators applicable for evaluating the programs on “creating supportive environments” in literature. In this review, we aimed to identify and categorize the indices/indicators applied to evaluate the “creating supportive environments” mechanism of the Ottawa Charter for health promotion in different settings. Our focus was on the indices/indicators applied to assess “built environments,” which include aspects of people’s surroundings that are manipulated or modified by humans, such as commercial or residential buildings, the infrastructure of transportation and parks, and other open spaces.

METHODS

1. Study Methods

This study reviews current literature on the indices/indicators developed to evaluate the “built environments” associated with the “creating supportive environments” mechanism of the Ottawa Charter in different settings. To categorize the identified indices/indicators, we used a setting-based approach, particularly the list of Healthy Settings introduced by WHO. In January 2022, we performed a literature search with no time constraint across Medline (via PubMed), Scopus, and Embase databases, using several keywords from both Medical Subject Headings and free-text terms, such as “health promotion,” “supportive environments,” “built environments,” “healthy environments,” “healthy settings,” “index,” and “indicator.”

2. Inclusion and Exclusion Criteria

We included the studies that developed, identified, and/or measured health promotion indices/indicators related to “built environments.” Only articles in English were included. Articles that did not have the word “index” or “indicator” as measurement tools were excluded.

RESULTS AND DISCUSSION

In total, 281 articles were included, the majority of which (77%) were conducted in developed countries. From these 281 articles, 302 indices/indicators were identified. After eliminating duplicate indices, 37 indices/indicators related to “built environments” were included in the review (Figure 1). According to their application in different settings according to WHO, the identified indices/indicators were categorized into seven domains: (1) Healthy Cities (n=5), (2) Healthy Municipalities and Communities (n=18), (3) Healthy Markets (n=3), (4) Healthy Villages (n=1), (5) Healthy Workplaces (n=4), (6) Health-Promoting Schools (n=3), and (7) Healthy Hospitals (n=1) (Supplements 1-7).

1. Healthy Cities

Five indices were categorized in the “Healthy Cities” domain: Walkability Index (WI), Green View Index, Bicycle Safety Index, Bike Composite
According to evidence, “urban planning in cities significantly affects the health risks and challenges of populations.”23) For instance, the residents of poor neighborhoods in cities are exposed to unhealthy environments, such as pollution and poor housing, and the burden of serious health-related suffering.24) A clear and objective image of a city is provided by the indicators reporting the city requirements, which describe the available resources in the city and addresses the characteristics.25) “Healthy Cities” indicators can be an important source of information for researchers and urban and health policymakers. For instance, evaluating the aspects of neighborhood environments that encourage people to walk is critical in decision-making for properly built environments.26) In this regard, WI was used. The indicators were used to construct the composite WI with housing density (number of occupied residential housing per square kilometer), population density (number of people per square kilometer street), connectivity (number of intersections with at least three converging roads and/or pathways), and accessibility of walkable destinations (number of services—banks, retail stores, libraries, community centers, etc. within 800 meters or 10-minute walk). To measure the index, a 12-item scale was applied.22) Moreover, the efforts of evaluation of “Healthy Cities” has also been crucial and integral to the actions of the WHO European Healthy Cities Network since its initiation.27) Future research should focus on accurately recording, verifying, and properly collecting data for the indicators.25) A local indicator for each specific Healthy City Project is required. Additionally, local communities should participate in the scheme of indicators and their evaluation processes.26)

2. Healthy Municipalities and Communities
Eighteen indices were categorized in this group: Movability index, Age-Friendly City Index, Cumulative Environmental Hazard Index, Social Vulnerability Index, Relative Food Environment Index, Racial Isolation Index, Built Environment Index, Child Social Exclusion Index, Neighborhood Deprivation Index, Air Pollution Index, Food Stress Index, Global Food Security Index, Environmental Quality Index, Synthetic Air Quality Index, Community Fluoridation Compliance Index, Holistic Ecosystem Health Indicators, Community Healthy Living Index, and Child Opportunity Index (Supplement 2).

Healthy municipalities, cities, and communities need a strategic opportunity to practically apply health promotion principles and values at local levels.29) The global vision of health and development can be strengthened and implemented in municipalities.30) It is necessary to evaluate health promotion strategies, such as Healthy Municipalities and Communities, which can help fortify the valence of institutions and communities in promulgating efforts that are coherent with the priorities and needs of people.31) For instance, the relation between built environment characteristics, such as access to healthful food resources and risk factors for non-communicable diseases are clearly known.32) In this regard, measuring the residential and environmental characteristics associated with food is a critical issue.33) People living in areas with many fast food and convenience stores but comparatively few grocery stores may be at very high risk of developing obesity and diabetes.34)

As an instance, in a previous study conducted among approximately 40,000 Californians, the Retail Food Environment Index (RFEI) was applied to investigate associations between the retail food environment and the prevalence of obesity and diabetes. The RFEI is the ratio of the overall number of convenience stores and fast food restaurants to grocery stores and product vendors near where people live. The study concluded that Californians were found to live in a community...
with many fast-food restaurants rather than grocery stores and/or other stores offering more nutritious options; hence, the increasing development of diabetes and obesity was expected.40

3. Healthy Markets
In this group, three indices were categorized: healthiness indicators for commercial establishments that sell foods for immediate consumption, indicators of the relative availability of healthy versus unhealthy foods in supermarkets, and indicators of readiness/capacity for implementation of healthy food retail interventions (Supplement 3).

Studies on food environments have shown a lack of suitable indices/indicators to describe and monitor food environments.41 The characterization of food retail from the perspective of a “community food environment,” with a focus on physical accessibility and availability of the establishments that sell food, was the focus of previous studies.32 Assessing the consumer food environment in establishments that sell foods for immediate consumption has not received enough attention due to the lack of simple, reliable, and valid summary indicators.42 A study was conducted to create and assess the applicability of a priori classification of establishments that sell foods for immediate consumption. In the study, the indicators were categorized by the types of most frequently sold foods at these establishments, according to the purpose and the extent of foods’ industrial processing.43 It was finally concluded that creating indicators just by considering either the existence or absence of food subgroups is not enough, and thus separately taking into account the variety and amount of food items seems necessary.44

Unhealthy food availability in stores may influence the associated consumers’ health outcomes.45 The ratio of the total availability of healthy food versus the total availability of unhealthy foods in stores was defined as a “gold standard” and was used as a simple indicator.46

4. Healthy Workplaces
Three indices were categorized in this group: Pressure Management Indicator, Workplace Health Achievement Index (WHAI), and Health-Friendly Activity Index (Supplement 4).

According to the definition of the National Quality Institute in Canada, a healthy workplace, in terms of “holistic workplace health,” comprises social, physical, personal, and organizational support “to entirely ameliorate the employee quality of life both within and outside the workplace.”47 Workplace health programs (WHPs) comprise environmental activities, policies, and supports in the workplace to engage workers in healthy behaviors and facilitate their well-being.48 Moreover, the evaluation of WHPs is critical in comprehending the benefits and the factors facilitating and/or inhibiting their sustainability and effectiveness.49 Various indices have been developed in this regard. For example, WHAI is a self-assessment scale used in different businesses to assess the health of the workforce and workplace.50 The WHAI was initially developed in 2015 by the American Heart Association in alliance with its Workplace Health Steering Committee. The results of a study conducted to test the validity and reliability of the updated WHAI showed that the scale had a high level of face and content validity and reliability.51 A variety of factors may contribute to creating a healthy workplace, and thus, finding proper indicators for this may be a complex task. Despite the efforts to identify and describe the job and organizational characteristics associated with healthy organizations, there is still little direct empirical research and a lack of systematic analysis of a healthy work organization model.52

Studies that explicitly deal with healthy workplace indicators are limited in the literature. The studies in this field are commonly focused on the employee’s views of what constitutes a healthy workplace and/or some guidelines on how to create such a workplace.53 It would be useful for researchers to reach some consensus on the concept of workplace/work environment/work organization. Furthermore, successful translation of healthy workplace ideas into sustainable working life practices also requires well-designed practical tools to assess the impact on workplaces and workers.54

5. Healthy Villages
Only the Index of Rural Access (Supplement 5; primary care access) was found to be categorized in this group. This index was developed to measure access to primary care based on combining the three essential access components of mobility, spatial accessibility (proximity and availability), and population health needs.55 A “healthy village” is a setting with well-being at the individual, family, and communal levels, in a harmonious and peaceful social environment.56 Lifestyle and living conditions in villages characterize the health of village populations. The healthy village paradigm affects these determinants of health by changing behaviors and environments.57 Unfortunately, no specific indices/indicators were found for evaluating healthy villages in the literature. Constructed for the state of Victoria, Australia, the “Access to Health Services” was the only index identified in this domain.58 The index was provided by assessing the interactions of several factors, including suitable supply (availability), sensible time/distance impedance to existing services (proximity), the nature and the level of demand for those seeking care (health needs), and the potency of people to access care when they need (mobility).59 The indicators used to measure each dimension were intentionally obtained from regularly-updated and available datasets. Additionally, the need to measure small area variations of access in rural areas necessitated the use of the smallest geographical unit for all indicators.60 Successful implementation of a healthy village intervention and/or evaluation strategy depends on the availability of indicators that can adequately reflect the complexity of the system.61 However, the development and/or reporting of such indices in the domain of healthy villages seems to have been ignored. Hence, researchers and practitioners in the field of rural studies and health should consider the issue in the future of their research.62

6. Health-Promoting Schools
Three indices were categorized in this group: Healthy School Food Environment Index (HSFEI), School Climate Index, and Composite Envi-
environmental Support Index (Supplement 6).

The purpose of health-promoting schools was to build enabling environments for future generations to improve skills and knowledge in caring for and improving their as well as the health of their communities by using the health promotion principles in the settings where people live and work. In line with the mechanisms established in the Ottawa Charter in 1986, the WHO declared the Global Health Promoting Schools in 1995. It was aimed to consider organizational structure change, including improvement of the school’s physical and social environment besides individual behavioral change. For example, often fewer healthy competitive foods/beverages are sold in schools situated in regions with low socioeconomic status. Such disparities should be reduced by state competitive food laws. For example, in a study conducted to recognize the socioeconomic differences in the association between competitive food laws and the school food environment, the HSFEI was developed, within which the higher score was indicative of a healthier environment. Despite such efforts, the study of this domain is still in its infancy. A review study reported that a wide range of different methodologies was employed in the evaluation process of health-promoting schools interventions, which hinders the direct and reliable ascription of the observed outcomes to their associated interventions. As a result, it cannot be claimed that there is strong evidence for the effectiveness of health promotion interventions on the health of students, staff and the community, and the school environment. Hence, clearly defined, feasible, valid, and utilisable indicators are still vital for evaluating the process, output, and outcome of intervention in this field.

7. Healthy Hospitals

Three indices were categorized in this group: Hospital Safety Index, Health Care Quality Indicators, and Performance indicators (Supplement 7).

Considering the importance of hospitals’ role in the re-orientation and modification of health services, some standards are required to improve healthcare services and ensure quality within the hospitals. Five standards of Health Promoting Hospitals (HPH) were developed by the WHO in the Ninth International Conference on Health Promoting Hospitals in 2001, addressing the following issues: management policy, patient assessment, patient information and intervention, promoting a healthy workplace, continuity and cooperation measurable elements and indicators required to implement practical use of the standards in planning, implementation, and assessment of health promotion in hospitals. Currently, these indicators have not been specifically developed for the standards separately; for instance, Hospital Safety Index developed by WHO and Pan American Health Organization in cooperation with several experts from different fields at an international level was used to evaluate the resiliency and readiness of Indonesian hospitals. This index uses the “all hazards approach,” specifically focusing on earthquakes in the structural component. Future studies in the field of health-promoting hospitals need to consider this.

LIMITATIONS AND STRENGTHS

The present study has several strengths. It is the first effort to investigate literature pertaining to the indexes/indicators developed/applied to evaluate the “creating supportive environments” mechanism of the Ottawa Charter for health promotion. We categorized the indices/indicators based on their application in different settings. To our knowledge, such a set of indices/indicators has not been presented in the literature. Moreover, our study has some limitations. We included only the studies that used the terms “index/indicator” and not the studies that applied other terms like “measurement” and “tool.” This may be the reason we could not identify any index/indicator on “built environment” in the domains such as “Healthy Universities” and “Healthy Prisons.” We also could not present all indicators related to the indices, even in the tables of the supplementary file, due to the large number of indicators in some of the indices.

CONCLUSION

We presented a collection of the indices/indicators developed/applied in the studies on the “creating supportive environments” mechanism of the Ottawa Charter in different settings. This collection of indices/indicators can be used by health promotion specialists, health policy-makers, and social health researchers while designing/evaluating interventions to create a supportive environment for health promotion in different settings. A majority of studies lacked presentations of valid information on the indices/indicators. Providing a classified set of indices/indicators based on their application for evaluating health promotion interventions may shed light on the challenges and limitations associated with the indices/indicators, with the hope of encouraging health promotion specialists and researchers to increase their efforts in assessing the quality and quantity of their studies in the field. Such review studies seem to help highlight the existing standardized measurement tools for health promotion program evaluations and their associated challenges and limitations.
CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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SUPPLEMENTARY MATERIALS


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