

Healing Environment Design for a Healthy Community: The Harmony Community on Lake Eloise, Florida

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ABSTRACT

Social determinants of health consist of personal and societal factors that directly and indirectly affect the wellbeing or community health. In the design of a healthy or healing environment, it is imperative to consider the features such as 1) space utilization, 2) nature and harmony, 3) color (biophilic), 4) air, 5) water, 6) shape, 7) light, 8) sound/noise, 9) visual appreciation of photos portraying activities, 10) comfort, 11) nourishment, 12) interior design, 13) exterior design, and 14) use of health information technology for connectivity and communication. A case study on the built environment for promoting community and population health is portrayed. Implications of integrating person- and ecological-centered approaches in the design of healthy environment are introduced.

Keywords: Design features, Personal and ecological determinants of health, Information technology use, Environment factors, Restorative health, Population health

INTRODUCTION

Good health is something that everyone is trying to achieve. The questions for promoting well-being or health for the elderly are as follows: 1) What is good health? What are the factors or conditions that are conducive to healthy environment? How can we create a built community that is designed for promoting the well-being of older residents? From a transdisciplinary perspective, a desirable and affordable community is a planned community that can optimize and meet all environmental health requirements and human needs. The goal of the Harmony on Lake Eloise development project in Polk County, Florida is to search for specific evidences to guide the development and implementation of an integrative and healthy environment for older adults.

The individual and societal determinants of health are important to be considered in the design of a healthy community. Finding a comprehensive solution for minimizing any physical, mental and social well-being risks is essential to the promotion of healing environment. Thus, through the integration of micro-level (individual/personal) and macro-level (environmental and ecological) factors, a balanced and harmonized set of principles could be developed to guide the construction of a built environment. In turn, scientific methods for measuring the effectiveness of the community interventions could be employed in this evidence-based approach to environmental changes or

impacts on health and well-being of residents in a new community.

Approaches to Healing or Healthy Environmental Design

The complex interactions among individual, family, and community factors are the leading determinants of the well-being of people and community. The social-determinants theory emphasizes the impact of factors affecting the health of individuals at multiple levels, including local, regional, neighborhood and community levels, and is used as an analytical approach for assessing the health of people and the environment. According to this approach, promoting health requires the improvement of living conditions in multiple dimensions of housing, ecosystem, employment, and education, access to health services, environmental quality, social support and social networks [1].

Human-environmental interactions can be examined under the theory of social determinants of health. Social systems

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and ecosystems are defined as a complex and adaptive systems. The complexity stems from the fact that human systems and ecosystems are composed of numerous components and the relationships among these components. The adaptivity indicates a feedback structure between systems that helps to maintain stability in the ever-changing environment [2]. This modern systems approach calls for the constant adaptation in response to environmental or community changes. This theoretical perspective is also called "adaptive complexity theory," one of the major management theories. An optimal set of principles can be identified from this perspective to enhance organizational goals or institutional missions.

We plan to conduct an empirical study to identify theoretically-sound and relevant variables for developing and implementing the Harmony on Lake Eloise project. Appropriate survey research or focus group methods will be employed to generate a blue-print for achieving optimal solutions in promoting community health and wellbeing.

Considering the goal of improving the environmental wellbeing through the search for human and environmental principles, we can conduct a thorough and systematic review of scientific evidence or literature review on individual and societal determinants of health and well-being [3,4]. The study should address the development of tools for analyzing community health of a cross-sectional group of residents in varying stages of community living, such as before, during and after the implementation of the Harmony Community Health project.

Q&A Interview on the Built Environment for Restorative Health

A Summary of My Responses to a Personal Interview Conducted by Dr. Kathy Campbell, Assistant Professor of Public Health at the University of Florida in Regard to Healthy Community & Population Health Management.

1. What is your academic/professional background, and how do you envision it informing your contribution to the Harmony Translational Health Study (HTHS), healing environment research in Polk County, Florida?

I received my Ph.D. in Sociology/Demography at University of Georgia in 1970 and then earned my public health degree in Social Epidemiology of Chronic Disease at Johns Hopkins in 1971. Over four decades, I have conducted sponsored research on Epidemiology of Work-Limiting Disabilities, NY-PENN Community Needs Assessment, Baltimore County Needs Assessment of the Elderly, Longitudinal Studies of Gerontological Health, Evaluation of Neighborhood Health of Low-Income Communities, Long-Term Care Experiment, Medicare Managed Care Competition, Medicaid Managed Care Competition, Evidence-based Healing Environment, Longitudinal Study of Nurse Staffing and Quality of Care in Nursing Homes, Effects of Accountable Care Organization in Rural Health,

Artificial Intelligence Research, Population Health Management, etc. My transdisciplinary perspective to community health evolves from an integration of micro (person-centered) and macro (ecological) theoretical framework. I advocate that health or wellbeing of the people is jointly influenced by micro- and macro-level predictors or determinants. This integrative perspective has been applied to the study of hospital readmissions, type 2 diabetes outcomes research, obesity reduction, innovative care management for poly chronic conditions, etc. I have published 14 books, 33 book chapters, and more than 200 articles in health and aging journals. I serve on the editorial boards of 15 journals.

As a health services researcher and social epidemiologist, I am well qualified to design and evaluate innovative community interventions and experimentations. My ability to conceptualize a complex community study on healing environment coupled with psychometric assessments of instruments or measurement scales enables me to produce scientific evidence-based research results and also publish them in leading journals.

2. When considering scales from the individual home and yard to the full neighborhood, what features of new residential community development in Florida could be implemented or leveraged to foster human health or to prompt health-promoting behaviors?

The strengths of designing a well-balanced community, particularly related to new residential neighborhood, are enhanced by considering population health or wellbeing as the consequence of perfect harmony between human inhabitants and the environment. Furthermore, health promotion should advocate the reliance on self-care management or self-efficacy as many chronic conditions can be stabilized or maintained by strengthening the KMAP-O (knowledge-motivation-attitude-practice-outcome) relationships [5]. The effective implementation and use of health information technology (HIT) can certainly facilitate the communication between health providers and care recipients.

3. What features of new residential community development in Florida could be implemented or leveraged to foster animal health, human-animal-nature interactions or the human-animal bond?
 - Features in homes (e.g., special design features, lighting, appliances, space conditioning): Yes, all of these items are pertinent in the design of a new community.
 - Community spaces: An information center such as information and referral (I&R) resources should be established in a community so that health promotion and disease management programs can be provided and shared.

- Trails: Natural trails with educational features should be considered.
 - Parks: Gardens are essential to beautify the neighborhood, particularly in parks.
 - Dog parks: small dog parks should be established.
 - Direct interactions with soil and water: I am not knowledgeable about the relationship between soil and wellbeing. The quality of water should be regularly examined and investigated. The environmentally induced hormones should be eliminated.
 - Production, processing, distribution, consumption, and post-consumption of food and beverage: Farm market or other food delivery services could be arranged.
 - Other community spaces or features that could foster health or health behaviors: A community health center as part of public health services should be established. Voluntary health professionals should be invited to provide health screening and educational services to the community.
4. What anticipated health outcomes may result from the features, behaviors, or interactions mentioned in questions 2 and 3?

Health outcomes could be divided into three categories: proximal outcome, intermediate outcome, and distal outcome.

- 1) Proximal outcome refers to user's satisfaction with regard to the quality of care or services.
 - 2) Intermediate outcome refers to user's continued use as an early adopter and a person encouraging others to use.
 - 3) Distal outcome refers to morbidity and mortality reduction as well as self-reported health status.
5. What measurable indicators for the health outcomes could be associated with those features, behaviors, activities, or interactions?

Measurable indicators for these three types of outcomes could be based on prior research literature. My experience in conducting several national studies on innovative community-based health services enables me to select appropriate instruments or indicators to reflect their short- and long-term effects on community health or population health. More details could be found in my recent book entitled "Population Health Management for Poly Chronic Conditions: Evidence-Based Research Approaches" published by Springer, 2018 [4].

6. What are the anticipated long-term impacts of these health outcomes?

The metrics for measuring health outcomes could include improved lifestyles, reduced obesity, prevent re-

hospitalization, reduced morbidities, and then reduce premature deaths.

7. What types of longitudinal studies could be implemented to monitor, measure, analyze, and report upon these health indicators, occupant outcomes, and long-term community impacts?

A prospective study design is needed, taking the advantage of a natural experiment to be implemented in a new neighborhood or community, in the county. A control community or neighborhood should be selected, using the propensity score matching and analytical technique. We are designing a similar study related to the University of Central Florida (UCF) downtown campus to assess health effects of a newly "built environment".

8. What types of devices, and at what costs, might be necessary to conduct these longitudinal studies?

The costs for longitudinal studies vary by the experimental design, sampling, and measurement instruments designed. The matching case-control experiment is time-consuming and costly. There are alternative strategies can be developed and evaluated.

9. What characteristics of control versus treatment (for comparison groups) and/or pre- versus post-intervention (for individuals) would be necessary for these longitudinal studies?

The assessment of community health impacts at the personal and population level should be carefully designed. The duration of the observation varies by the timeframe specified. Ideally, we should have 4-wave assessments on personal and community health made during a three-year project.

10. What are the basic components of healing environment for a healthy community?

From a systematic review on healing environment design and supportive evidence in 2016, Ulrich [6] cited numerous research evidences and best practices and demonstrated the role of healing environment design in improving positive medical outcomes. Furthermore, he advocates the development of supportive design theory that will foster a sense of control and privacy, access to social support, access to nature and other supportive attractions. The views are further supported by a recent research review conducted by Iyendo, Uwajeh, and Ikenna [7]. In conclusion, healing environment is part of human eco-system. Thus, design of a supportive and healing environment is imperative for improving the health and wellbeing of the population via the implementation of integrated care to avoid fragmented care problems (**Figure 1**).



Figure 1. Integrated Care to Reduce Fragmented Care.

CONCLUSION

The management of population health for the elderly coupled with the design of healing environment enables us to optimize health resources and improve the effectiveness and efficiency of the health services delivery system. More specifically, a higher level of population health can be achieved by concerted efforts in making patient-centered improvements [8,9] through healing environment and restorative health design and implementation at the targeted population or community level (**Figure 2**). The integrated approach by incorporating person-centered and environment-centered determinants of health is needed for a harmonized community design and health plan.

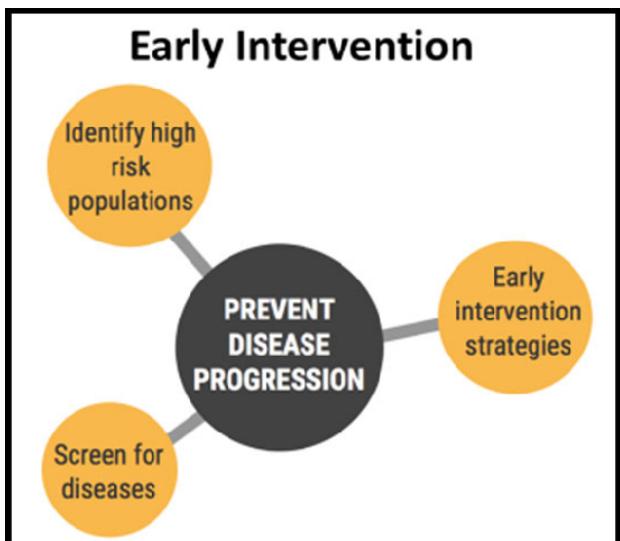


Figure 2. Population Health Management via Targeting High Risk Patient Population and Providing Early Intervention.

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