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The Ecological Model in the Context of Aging Populations: A Portfolio of Interventions

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Background

- The promotion of health and well-being in older populations remains a major public health objective.
- The ecological model is a useful framework for the design, administration, and evaluation of a new generation of health promotion programs.

Questions

- To what extent have we been successful in developing ecologically-based interventions?
- What standard should we use to answer that question?
- What are some examples of ecologically-based interventions?

Objectives

- To review the ecological approach.
- To assess to what extent we have been successful in developing ecologically-based programs.
- To present a proposal for an ecologically-based program as one example.

Ecological Approach

- Based on the assumption that patterns of health and well-being are affected by a dynamic interplay among biological, behavioral, social, and environmental factors.
- Unfolds over the life course of individuals, families, and communities.

Ecological Approach

- Age, gender, race, ethnicity, and socioeconomic differences shape the context in which individuals function, and therefore directly and indirectly influence health risks and resources

Ecological Approach: Implications for Interventions

- To identify multiple points of possible intervention in public health, from the microbiologic to the environmental levels.
- To postpone the risks of disease, disability, and death.
- To enhance the chances for health, mobility, and longevity.

Ecological Approach: Implications for Intervention

- Provides a multi-level framework for connecting research, practice, and policy (McLeroy et al., 1988; Stokols, 1996).

Ecological Approach: Implications for Intervention

- The central idea of the ecological approach is the ***dynamic interplay*** among the levels, for example, the individual and the environmental levels.
- Implies a multi-level intervention, for example, the individual ***and*** the environment.

Ecological Approach: Implications for Intervention

- Many interventions that are referred to as “ecological” focus almost exclusively on the “environmental” level.

Ecological Approach: An Example

- Fall prevention programs that are designed to enhance functional capacity of individuals, in conjunction with reducing environmental hazards in the home.
- An example of a multi-level intervention.

Ecological Approach: An Example

- A review of clinical trials in this area concludes that there is evidence that a multi-level intervention, focusing on both the individual and the environment reduces the risk of falls (Tse, 2005).

Ecological Approach: An Example

- Does not appear to be other examples of multi-level interventions that address other outcomes, such as physical activity or proper nutrition.

Walking in Older Populations

- Growing body of research on the association between the neighborhood environment and measures of mobility in older populations.

Places that encourage walking



Places that discourage walking



Objective

- Review and evaluate current research in this area with a focus on walking.
- Address the practice and policy implications of this research.
 - Environmental Modification
 - Environmental Adaptation

Neighborhood Environment and Walking in Older Populations

- **Excellent reviews available** (Cunningham & Michael, 2004; Salens & Papadopoulos, 2008; Yen, Michael, Perdue, 2009).
- **Land-use patterns:** Older residents of mixed-use communities are more likely to walk than residents of single-use (residential areas) (Gauvin et al., 2008; Nagel et al., 2008; Frank et al., 2010; Satariano et al., 2010).

Neighborhood Environment and Walking in Older Populations

- **Walking Destinations:** Proximity to particular destinations encourage walking among older adults, e.g., grocery stores, convenience stores, parks, open spaces, trails, post offices (King et al., 2000; Wen et al., 2004; Michael et al., 2006; Lee, 2007).
- **Housing and Population Density:** Older adults living in areas of higher density (grid-street pattern and shorter block length) are more likely to walk than older adults living in areas of lower density with more of a serpentine-street pattern (Frank et al., 2008; Rodriguez et al., 2009).

Neighborhood Environment and Walking in Older Populations

- **Perceived Safety:** Older adults who perceive their neighborhoods as safe are more likely to walk than those who view their neighborhoods as unsafe (King, 2008; Li et al., 2005; Mendes de Leon et al., 2009; Satariano et al., 2010).

State of the Research

- Few studies are based on longitudinal assessment.
- Limited evidence base for practices and policies.

Policies continue to be set.

- Despite this limited evidence base, environmental policies and programs are being recommended to enhance health and mobility.

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Environmental Modification

- Modifications to environmental elements to enhance mobility among older adults.
- Modifications could vary in scope, e.g., from length of signal time for pedestrian crossing, sidewalk repair, and illumination level of street lights to infill developments and zoning changes.

Environmental Modification

- Face validity: Makes sense. Remove environmental barriers and other stressors to enhance mobility.
- Feasibility: Establish alliances with other groups and organizations to enhance the environment, e.g., Smart Growth and Complete Streets.
- The research base, however, remains limited. In most cases, evidence-based programs are too time consuming and costly.

Environmental Adaptation

- Linking older adults to the best that their environments have to offer.
- Examples include “safe walking routes” to common destinations.

Environmental Adaptation

- Face Validity. Makes sense. Provides a safe and effective path to adapt to existing barriers and stressors.
- Feasibility. Evidence that older adults can use environmental audits to identify safe and convenient walking routes.

Environmental Adaptation

- Feasibility. Alliances with other groups, e.g., local businesses along walking routes.
- Efficiency. Implementation may require less time and be less costly than environmental modifications.
- Effectiveness: Community-based trials. Could be thought of as a necessary first step before environmental modifications. Evidence base for future environmental modifications.

Multiple-Level Intervention: A Third Way?

- Multiple-Level Interventions may represent a third way. Consider individual-environment strategies to reduce falls among older adults.
- This represents an ecologically-based intervention.

Multi-Level Intervention to Enhance Walking: An Example

- Objective: Improve level of walking among older adults diagnosed and treated for colorectal cancer.

Multi-Level Intervention to Enhance Walking: An Example

- Background: Colorectal cancer is one of the leading forms of cancer in older populations.
- Engagement in physical activity, including walking, improves duration and quality of life and reduces disability among older colorectal cancer survivors.

Multi-Level Intervention to Enhance Walking: An Example

- Individualized activity program, Active Choices, has been shown to enhance mobility in older cancer patients.
- Question: Would an environmental component to Active Choices make it more effective?

Multi-Level Intervention to Enhance Walking: An Example

- Identify a sample of older colorectal cancer survivors, 4 to 6 weeks after diagnosis and treatment.
- Baseline assessment: Level of function and walking and other key factors.
- Randomize the sample to three study arms.
- Follow-up assessment: Level of function and walking and other key factors.

Multi-Level Intervention to Enhance Walking: An Example

- Study Arm #1: Active Choices only.
- Study Arm #2: Active Choices + Walking Maps
- Study Arm #3: Controls. Provision of written material on the benefits of physical activity.

Multi-Level Intervention to Enhance Walking: An Example

- Consider the implications of this type of program for developing an ecologically-based discharge planning program.
- It may represent a strategy to integrate clinical medicine and public health.

Future Directions

- Ecological model should continue to serve as a framework and plan for a new generation of health promotion programs to enhance health and functioning in older populations.
- Must think creatively and collaborate with others to meet the challenges of an aging population.

Thank you.

- I welcome your comments and suggestions.
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