An Investigation into the Potential of Horticultural and Nature-Based Interventions for Change

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Abstract

The majority of the planet's inhabitants live in urban areas, and vulnerable populations are much more likely to live in urban environments with many barriers preventing wellness promotion (Africa et al., 2014). Marginalized communities are significantly more likely to have limited access to natural environments, leading to detrimental and life-threatening impacts on community wellbeing (Africa et al., 2014). Previous research has shown how horticultural therapy possesses the power to reduce stress and anxiety symptoms, bolster productivity, establish community connectedness, and promote resilience (Hall & Knuth, 2019). Horticultural therapy could include walks through nature or gardening to accomplish its powerful effects (Meredith et al., 2020). Although these findings about nature-based interventions are promising, there are still gaps in the literature researching horticultural therapy interventions. In addition, the horticultural therapy field lacks research about the evaluation of programs that utilize several disciplines to deliver multifaceted horticultural community programs. In the current study, a systematic literature review of horticultural interventions will assess the potential impacts of horticultural therapy and community interventions. Additionally, foundational and innovative measures will be gathered to evaluate the impact of a current Cook County program empowering

high school students. The literature will highlight how interdisciplinary horticultural programs can be utilized to promote community change, and how these programs can be evaluated.

Keywords: horticultural therapy, health equity, and nature-based therapy

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An Investigation into the Potential of Horticultural and Nature-Based Interventions for Well-Being and the Methods to Evaluate Their Effects

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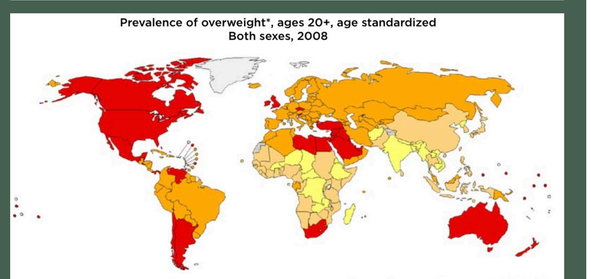
INTRODUCTION

- 50% of the planet's populations live in urban environments, and this percentage is projected to increase due to the trend of urbanization.[1]
- Many green and nature-based spaces are often disproportionately located in White neighborhoods with socioeconomic privilege.[1]
- Living in urban areas with fewer green spaces has been linked to higher rates of mental health issues, such as depression and anxiety (Shanahan et al., 2019). Students represent a vulnerable group with more mental health issues than ever before with suicide and self-harm on the rise.[2]
- Marginalized communities in urban areas with fewer green spaces often are at higher risks for diseases such as cancer, heart disease, and diabetes.[1]



- Communities with accessible nature spaces have higher rates of physical activity to prevent obesity. Over 60 percent of the population in the United States is overweight.[1]

Figure 1: retrieved from Africa, & Logan, & Mitchell, & Korpela, Kalevi & Allen, Diana & Tyrväinen, Liisa & Nisbet, Elizabeth & Li, & Tsunetsugu, & Miyazaki, Yoshifumi & Spengler, & Group, on. (2014). The Natural Environments Initiative: Illustrative Review and Workshop Statement.

CURRENT STUDY

- A literature review was conducted to evaluate the potential effects of horticultural interventions and gather measurements to evaluate a Cook County nature-based program for high school students in an urban and marginalized community.

[1] (Africa et al., 2014).

[2] (Meredith et al., 2020).

POTENTIAL OF NATURE-BASED INTERVENTIONS

Mental Health Benefits

- Nature-based interventions have been shown to decrease anxiety and depression symptoms (Bloomfield, 2017).
- "Mental health engagement with, access to, and interventions within nature" can offer an alternative approach to mental health (Bloomfield, 2017, p. 82).
- A study evaluating the impact of horticultural interventions on veterans with PTSD concluded nature-based methods led to decreases in PTSD symptoms, increases in community connection, and a greater sense of fulfillment (Poulsen et al., 2015).

Self-Esteem

- Horticultural interventions also have been shown to influence self-esteem, and the improvements of self-esteem can beneficially impact other areas of concern, such as mental health (de Seixas et al., 2017).
- Participants in a nature-based program in a mental health clinic highlighted many beneficial effects (de Seixas et al., 2017).
  - They felt a greater connection to community and felt less isolated (de Seixas et al., 2017).
  - They were proud of their progress and successes in the program (de Seixas et al., 2017).

Attention and Behavior Benefits

- In nine studies using the "Strengths and Difficulties Questionnaire" to assess the impact of horticultural interventions, children were most impacted in their hyperactivity and attention (Vanaken & Danckaerts, 2018, p. 4).
- Nature interventions also improved children's connection to their peers, improved their emotions, and bolstered their social skills overall (Vanaken & Danckaerts, 2018).

Figure 2: retrieved from Mangadu, T., Kelly, M., Orezzoli, M. C. E., Gallegos, R., & Matharasi, P. (2017). Best practices for community gardening in a US-Mexico border community. *Health Promotion International*, *32*(6), 1001–1014. https://doi-org.proxy2.library.illinois.edu/10.1093/heapro/daw025

METHODS OF EVALUATION FOR MENTAL HEALTH

Mental Health Measurements

- Goodman's "Strengths and Difficulties Questionnaire" (1997)
  - The rating categorizations are not true, somewhat true, and certainly true.
  - 5 subscales:
    - "Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Relationship Problems, and Prosocial Behavior" (Goodman, 1997, p. 1-2)
- Lovibond & Lovibond's "Depression Anxiety Scale" (1995)
  - This measures the frequency that participants experienced stress, anxiety, and depression scenarios.
  - 42 items on a 4-point Likert scale
- Terry et al.'s "Profile of Mood States—Adolescents" (1999)
  - 24 items
  - 4-point Likert scale
  - Several adjectives are used to describe how individuals feel at the moment of the evaluation.
- Derogatis et al.'s "Symptom Checklist--90 Revised" (1977)
  - This foundational measurement has been used in several horticultural research studies.
  - 90 items on a 5-point Likert scale
  - 9 subscales:
    - "Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, Psychotism" (Derogatis et al., 1977, p. 1-3).

Figure 3: retrieved from Mangadu, T., Kelly, M., Orezzoli, M. C. E., Gallegos, R., & Matharasi, P. (2017). Best practices for community gardening in a US-Mexico border community. *Health Promotion International*, *32*(6), 1001–1014. https://doi-org.proxy2.library.illinois.edu/10.1093/heapro/daw025

METHODS OF EVALUATION FOR LEADERSHIP AND PHYSIOLOGICAL EFFECTS

Leadership Measurement

- Xirasagar et al.'s "Multifactor Leadership Questionnaire–Adapted Version" (2005)
  - 43 items on a 5-point Likert scale
  - This evaluation method considers the frequency that individuals take part in the characteristics of "transformational leadership, transactional leadership, and laissez-faire leadership" (Xirasagar et al., 2005, p. 1-3).

Physiological Effects

- Meredith et al. (2020) Physiological Measurement Suggestions
  - Salivary Cortisol Levels
  - Heart Rate
  - Blood Pressure

CONCLUSION

- Horticultural and nature-based interventions have been shown to significantly impact overall wellness, mental health, self-esteem, and attention.
- There are several possibilities in the future evaluation methods of horticultural interventions. It could be significant to explore impacts on self-esteem, confidence, resilience, and community connection.
- By utilizing multiple methods of evaluation, the transformational effects of nature-based interventions can be depicted.

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