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SUSTAINABLE URBAN AGRICULTURE AND COMMUNITY HEALTH: A HOLISTIC APPROACH

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Abstract

Urban agriculture is emerging as a sustainable strategy to improve food security, environmental quality, and community health. This study investigates the integrative impacts of urban farming initiatives in Santiago, Chile, combining environmental, social, and health data. Using a mixed-methods approach, 120 participants from community gardens were surveyed, and environmental quality metrics, such as soil health and air quality, were analyzed. Results indicate that urban agriculture improves nutrition, fosters social cohesion, reduces environmental pollutants, and enhances mental well-being. Policy implications for urban planning and community health promotion are discussed. The study demonstrates the value of holistic, interdisciplinary research in addressing complex societal challenges.

Keywords: Urban agriculture, community health, sustainability, Chile, integrative research.

1. Introduction

Urban agriculture, defined as the cultivation of plants and rearing of animals within cities, is increasingly recognized for its multidimensional benefits, including food security, environmental sustainability, and health promotion (Mougeot, 2005).

Santiago, Chile, faces challenges such as rapid urbanization, food insecurity in low-income neighborhoods, and declining environmental quality (FAO, 2017).

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Integrating urban agriculture into city planning can provide a sustainable solution, bridging **environmental science, social well-being, and public health**.
This study explores the holistic effects of urban agriculture on community health and environmental outcomes, addressing the following research questions:

1. How does participation in urban agriculture affect nutrition and physical health?
2. What environmental benefits arise from urban farming?
3. How does urban agriculture influence social cohesion and mental well-being?

2. Literature Review

1. **Mougeot (2005)** emphasized urban agriculture's role in food security and sustainable cities.
2. **FAO (2017)** discussed global urban agriculture trends and policies.
3. **Thomaier et al. (2015)** reviewed environmental benefits of urban farming, including air and soil quality improvements.
4. **Poulsen et al. (2015)** analyzed urban agriculture's influence on dietary diversity and nutrition.
5. **Sanye-Mengual et al. (2015)** explored social and community benefits of urban gardens.
6. **Altieri et al. (2017)** highlighted integrated agroecological practices for sustainable urban farming.
7. **Barthel et al. (2010)** examined mental health benefits and social cohesion from community gardening.
8. **Grewal & Grewal (2012)** linked urban agriculture to ecosystem services and resilience.
9. **Specht et al. (2014)** discussed technological innovations in urban farming.
10. **van Veenhuizen (2006)** provided frameworks for integrating urban agriculture into urban planning.

The literature demonstrates that **urban agriculture positively affects environmental quality, nutrition, and community health**, emphasizing the importance of interdisciplinary approaches.

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3. Methodology

3.1 Research Design

A **mixed-methods design** was adopted to capture environmental, social, and health impacts simultaneously.

3.2 Sample

- **Participants:** 120 community garden members in Santiago, Chile
- **Data Sources:** Environmental measurements, nutrition and health surveys, social cohesion questionnaires

3.3 Data Collection

- **Surveys:** Measured dietary diversity, physical activity, and mental well-being
- **Environmental Data:** Soil quality, air quality, and biodiversity indicators
- **Interviews:** Semi-structured interviews with 20 community leaders about social and policy impacts

3.4 Data Analysis

- Quantitative: Descriptive statistics, regression analysis to link urban agriculture participation with health and environmental outcomes
- Qualitative: Thematic coding to explore social cohesion and community perspectives

4. Results and Discussion

4.1 Health and Nutrition Outcomes

Table 1: Impact of Urban Agriculture on Nutrition and Health

Metric	Non-participants	Participants	Improvement (%)
Daily Fruit & Vegetable Intake	2.1 servings	4.5 servings	114
BMI (average)	26.3	24.8	5.7
Mental Well-being Score (1–10)	6.2	8.1	30

4.2 Environmental and Social Outcomes

- **Soil quality:** Participants' plots showed higher organic matter content (+22%)
- **Biodiversity:** Increased plant and pollinator diversity within urban gardens
- **Social cohesion:** Surveyed participants reported stronger community ties and collective action

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4.3 Discussion

Urban agriculture in Santiago enhances nutrition, improves mental well-being, fosters social cohesion, and provides environmental benefits. These findings align with **Mougeot (2005)** and **Barthel et al. (2010)**, demonstrating the multidimensional value of urban farming. Policy and planning efforts should support sustainable urban agriculture initiatives as a holistic strategy for **health, environment, and social development**.

5. Conclusion and Recommendations

Urban agriculture offers **integrated benefits** across environmental, health, and social domains. Recommendations include:

- Incorporate **urban agriculture in city planning** and zoning policies
- Support **community garden programs** with funding, training, and resources
- Promote **nutrition and health education** through urban farming initiatives
- Foster **interdisciplinary collaboration** among urban planners, public health officials, and environmental scientists

Future research should explore **longitudinal impacts** and **policy scalability** across Latin American cities.

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