

# Food in the City: Review of Psychological Impact of Growing Food in Urban Spaces

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**Abstract:** The activity of growing food is an integral part of human civilization and survival. The present paper attempts at exploring the psychological impact of growing edible greens in the context of urban environment. The review focuses on the impact of growing food, with primary focus on psychological impact and mental health. The findings indicate an encouraging trend in urban farming, though research activity and academic interest in the area of psychological impact of growing food seems limited. Additionally, the review throws light on the sparse research in developing countries on the said topic.

**Keywords:** urban farming, psychological impact, mental health.

## 1. Introduction

Contact with nature in its numerous forms - through viewing landscapes that have an abundance of vegetation (Ward Thompson, 2011; Velarde et al., 2007), by being close to a lake (Song, 2015), by spending time walking on beautiful sandy beaches, by growing flowers in the balcony - ameliorates stress and has health benefits. This belief has a rich, long history. It goes back to Cyprus the Great, who - some 2,500 years ago - built gardens for relaxation in the busy town of Persia. Paracelsus, the 16<sup>th</sup> century German-Swiss physician, gave voice to the same when he wrote, "The art of healing comes from nature, not from the physician." In the Republic of Ireland, care was given to 'troubled people' by monks way back in the 14<sup>th</sup> century, through their involvement in monastery gardens. The Friends' Hospital in Philadelphia, USA, first opened a horticultural therapeutic unit in 1817, which is still running. In the UK, by the mid nineteenth century, local authorities were noticing that the well-being of patients involved in gardening work in the grounds was

better than that of their co-residents who were incarcerated indoors, largely in seclusion and looked after by servants. This led to the Dorset County Asylum regulations in 1856 actually making it obligatory for inmates to be involved in outdoor work (Ryan, 1993).

We have long believed, experienced and lived the many restorative effects of living close to nature. In India, there are festivities to mark the sowing as well as harvest seasons, most of which are celebrated in the fields symbolizing peoples' intimacy with nature (Shiva, 1993). The increasing urbanization is leading to a systematic reduction of the natural, green, forest cover and is also creating a greater physical distance between man and nature. Numerous researchers have asserted that separation from nature is detrimental to human development, health and well-being (Stilgoe, 2001). Urban environments are seen as inducing stress, too much artificial stimulation and lack of exposure to natural environments, such as parks, can cause exhaustion and reduce vitality (Stilgoe, 2001). On the other hand, interacting with nature has been proven to be beneficial for human health. There have been noted numerous positive physiological effects that occur when humans encounter, observe or otherwise positively interact with animals, plants, landscapes or wilderness. (Ulrich et al. 1991).

## 2. Theoretical Perspectives on Mental Health and Contact with Nature

The impact of contact with nature can be understood from various perspectives. The first section of the paper explores briefly, some theoretical positions regarding the impact of nature, specifically impact of active involvement with nature, on mental health. The Biophilia Hypothesis was originally referred to as an 'innate tendency to focus on life and lifelike processes' (Wilson, 1984), meaning that we gain the most satisfaction from processes that mimic the nature of life on many levels, be

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they cognitive or emotional. The hypothesis revolves around the concept that people possess an inherent inclination to affiliate with natural processes and diversity, and this affinity continues to be instrumental in humans' physical and mental development. Burls (2007) highlighted the benefits of human-nature interaction in terms of nine values as follows: a) Aesthetic Value (physical attraction and beauty of nature): adaptability, awareness, harmony, balance, curiosity, creativity and an antidote to pressures of modern living. b) Dominionistic value (mastery and control of nature): coping and mastering adversity, capacity to resolve unexpected problems, leading to self-esteem. c) Humanistic Value (affection and emotional attachment to nature): fondness and attachment, connection and relationship, cooperation, sociability and ability to develop alliances. d) Moralistic Value (Spiritual and ethical importance of nature): understanding the relationship between human wholeness and the integrity of the natural world, leading to a sense of harmony and logic. e) Naturalistic Value (immersion and direct involvement with nature): immersion in the sense of authenticity of natural rhythms and systems, leading to mental acuity and physical fitness. f) Negitavistic value (fear and aversion of nature): developing a healthy respect for risk, powers and dangers inherent in nature with an equal sense of awe, reverence and wonder, leading to deal with fears and apprehensions in a constructive way. g) Scientific value (knowledge and understanding of nature): developing a cognitive capacity for critical thinking, analytical abilities and problem solving skills, leading to competence. h) Symbolic value (metaphorical and figurative significance of nature): being able to access the limitless opportunities offered by the processes in the natural world to develop understanding of one's circumstances, leading to cognitive growth and adaptability. i) Utilitarian value (material and practical importance of nature): emphasizing the practical and material importance of the natural world upon which we rely for survival.

There is support for the Biophilia hypothesis in the fact that this sort of attunement with nature has survival value. Additionally, it implies that people feel most comfortable in settings where they can identify with life processes (Gullone, 2000). The other theoretical postulations include, the need hierarchy model that draws upon Maslow's (1970) hierarchy of needs model. Townsend and Ebden (2006) created an intervention framework titled, 'Feel blue, touch green' wherein individuals suffering from mood disorders were given made to directly interact with natural environments, through which higher order needs were met. Also, an interesting observation of Maslow's description of 'peak'

experiences is that it often occurs in natural settings. The Environmental self-regulation hypothesis in the current context implies that physical activity in natural settings improves positive emotions, self-esteem and behaviours (Boldeman et al., 2004). This implies that natural settings have the power to offset negative emotional states and help in augmenting positivity.

The present paper attempts to take the discourse further and attempts at exploring the psychological impact of growing edible greens in the context of urban environment. The paper reviews the impact of growing food, with primary focus on psychological impact and mental health. The psychological impact of growing greens has further been thematically presented to facilitate clear conceptualization and understanding. Understanding food production in urban spaces in itself can be challenging owing to the activity not being entirely organized, by its dynamic nature and the fact that the land and resource use in urban farming is always clearly identifiable or quantifiable. A working definition of Growing Food could be understood as involvement in the process of sowing, nurturing, harvesting and facilitating the activities of growing edible plants; for the purpose of the current paper the activity of growing food has been concentrated to the urban areas.

### 3. Understanding Prevalence

Growing food for personal and family consumption is a significant global activity that has received insufficient academic attention (Church et al., 2015). People grow, or could grow, their own food for personal consumption in many and diverse settings such as allotments, balconies, community gardens, fire escapes, indoor surfaces, pots on patios, private gardens, rooftops and school gardens (Grewal and Grewal, 2012; Kortright and Wakefield, 2011). In an extensive review of domestic gardens in Europe, Church et al. (2015) made some interesting observations. In the UK, it is estimated that 87% of households have access to a private garden (Davies et al., 2009), although individual gardens are becoming smaller and there has been a tendency to pave over front garden plots, reducing actual or potential food growing space (Freeman et al., 2012). The decline in the proportion of garden owners who grow vegetables, from 35% in 1986 to 20% in 1996 may be associated with this reduction in available growing space. However, a Canadian study based on semi-structured interviews with people who grow their own food (Kortright and Wakefield, 2011) noted that "more garden space does not necessarily lead to more food growing some of the largest supported the smallest amounts of food". Rather than access to growing space, therefore, the authors concluded that the principal

barriers to food growing were necessary skills and time. Although far less substantial than private gardens in number and area, allotment gardens are also significant, numbering around three million in Europe (Barthel et al., 2010). Another extensive review has been compiled by Golden in 2013 focusing on the impacts of Urban Agriculture (Golden, 2013). The review is situated in America and focuses primarily on American data and academic work in the field.

There is evidence to suggest that demand for community gardens may be increasing in the UK and Ireland, with a 65% increase in the number of these gardens registered by the Federation of Urban Farms and Community Gardens in 2011 compared to 2010 (Clavin, 2011). How many of these are used for food production is not clear but, as a comparator, Taylor and Lovell (2012) found that only 13% of community gardens in Chicago were being used for food production. In an interesting book on domestic food production in Australia, the author notes that home food production in the 1990s was more common than it seemed (Gaynor, 2005) and also mentions a 1941 "Melbourne University Social Survey" saying that "48% of sampled households produced food of some kind". There is extremely limited information currently available on urban domestic gardens outside of cities in the west. Urban food production is central to the existence of many poorer cities across the globe (Ellis and Sunberg, 1998; FAO, 1998; Tewari, 2000; Bakker et al., 2001), but academic interest still remains scanty. In a study done on the composition, diversity, density and distribution of plant vegetation in urban domestic gardens in the rapidly expanding south Indian city of Bangalore, researchers found high proportion of species had uses as food or as spices, medicinal properties, and/ or religious significance (Jaganmohan et al., 2012). In many metropolises like Delhi, Mumbai, Hyderabad and Chennai or small cities like Nashik and Nagpur, people are forming gardening groups to learn from each other. The movement has caught on well in Bengaluru, which has an estimated 7,000 terrace or rooftop gardens (Pallavi, 2014). The available literature surely points to an encouraging food production trend in urban areas world-wide.

Gardeners appear to be aware that gardening is good for their mental health; in a study based in USA, gardeners involved with the Philadelphia Gardening Programme were asked why they gardened (Blair et al., 1991). Interviewing a total of 144 gardeners, Blair et al. found that recreation (21%) was the most important reason followed by health benefits including 'mental health' (19%), 'physical health and exercise' (17%) and 'produce quality and nutrition' (14%). A similar study in Toronto,

Canada (Wakefield et al., 2007) collected data on the perceived health impacts of community gardening through participant observation, focus groups and in-depth interviews. Results suggest that community gardens were perceived by gardeners to provide numerous health benefits, including improved access to food, improved nutrition, increased physical activity and improved mental health. Community gardens were also seen to promote social health and community cohesion.

#### **4. Physical Health Impact**

Physical health and psychological well-being are intrinsically related to one another. The two areas in which physical benefits of growing food can be studied are - at the level of consumption and at the level of exercise. Gardening not only facilitates the consumption of superior quality, fresh food but also increases the likelihood of consumption of fruits and vegetables. In a survey conducted on 799 adults in Michigan it was found that adults with a household member who participated in a community food garden consumed fruits and vegetables 1.4 more times per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least 5 times daily (Alaimo et al., 2008). Gardening helps in health promotion (Armstrong, 2000). The act of gardening requires physical strength, endurance and flexibility. Since it is an outdoor activity it also facilitates the intake of fresh air and Vitamin D. The Centre for Disease Control and Prevention considers gardening a moderate intensity level activity, and can help achieve that 2.5 hour goal each week, that can aid in reducing the risk for obesity, high blood pressure, type 2 diabetes, osteoporosis, heart disease, stroke, depression, colon cancer and premature death (State, 2014). Additionally, those who choose gardening as their moderate-intensity exercise are more likely to exercise 40-50 minutes longer on average than those who choose activities like walking or biking.

#### **5. Stress Management**

Growing plants - tending and nurturing a live space has understood to promote stress relief. There is a lack of direct research material on the psychological impact of food growing on stress. Gardening has also emerged, in the recent years, as a scientifically proven stress reliever. Stress can cause irritability, headaches, stomach aches, heart attacks and worsen pre-existing conditions in the body. An experiment published in the Journal of Health Psychology compared gardening to reading as a stress-relieving activity; test subjects that gardened experienced a more significant decrease in stress when compared to the subjects that were assigned to read (Van Den Berg and Custers, 2010). Research carried out in Sweden found that

people with access to a garden had significantly fewer stress occasions per year (Stigsdotter and Grahn, 2011). They reported that people living in apartment blocks with no balcony or outdoor area had an average of 193 stress occasions per year. This was reduced to 126 stress occasions if respondents had a balcony. Those with a small garden had 86 stress occasions, while the least stress was reported by those with a large leafy garden, who only reported an average of 65 stress occasions per year. They also found that the more often people used their gardens, the fewer stress occasions they suffered per year. In comparing gardens with other urban green spaces, they found that while both were important for health, having a private garden was more important.

Hawkins et al. (2013) found a significant difference in perceived stress levels between the activities groups of 'indoor exercise', 'walkers', 'allotment gardeners', and 'home gardeners'. Allotment gardeners reported significantly less perceived stress than participants of indoor exercise. In a second study, Hawkins et al. (2013) had an older adult sample of community allotment gardening with a particular emphasis on stress recovery and again results indicate that allotment gardeners appreciate both 'doing' the gardening as well as 'being' in the garden/ allotment landscape with a wide range of benefits to their health and wellbeing.

Gardening can thus be recognized as an important way of dealing with stress. For some gardeners, food growing is valuable time to be with friends and escape personal and work problems. For others, the opportunity to be alone, in an alive space, is often an essential way of coping with the pressures of daily life in a complex society.

## 6. Treatment of Specific Psychological Disorders

Research focus on specific psychological disorders and their treatment using nature, natural settings and involvement in greening and growing activities is recent and limited.

**Attention Deficit Disorder:** A study focusing on children with Attention Deficit Disorder (ADD) examined the relationship between children's nature exposure through leisure activities and their attentional functioning using both within and between-subjects comparisons (Taylor et al., 2001). Parents were surveyed regarding their child's attentional functioning after activities in several settings. Results indicate that children function better than usual after activities in green settings and that the "greener" a child's play area, the less severe his or her attention deficit symptoms. The study concluded that contact with nature

may support attentional functioning in a population of children who desperately need attentional support.

A number of studies have shown the benefits of horticultural activities for patients with dementia. In a review of the literature of the evidence to support the use of therapeutic gardens for the elderly, Detweiler et al. (2012) concluded that many preliminary studies have reported benefits of horticultural therapy and garden settings in reduction of pain, improvement in attention, lessening of stress, modulation of agitation, lowering of medications and antipsychotics and reduction in falls. Gigliotti and Jarrot (2005) studied whether planting, cooking or craft activities engender differential responses from adult day service participants with dementia, and in a later study the same author team (Jarrot and Gigliotti, 2010) evaluated responses to horticultural based activities for randomly assigned groups in eight care homes and compared with responses to traditional activities. They showed that horticultural activities reached groups of participants who would often be difficult to engage in activities and resulted in higher levels of adaptive behaviour and in active and passive engagement.

Luk et al. (2011), studying horticultural activities in a nursing home in Hong Kong, found no significant effect on the reduction of agitation among the home residents with dementia. However, a significant decrease in aggressive behaviour was noticed. Hewitt et al. (2013) evaluated the impact of therapeutic gardening for people with young-onset dementia, measuring outcomes for both participants with dementia and their careers. The conclusion from their preliminary study suggested that structured gardening over a 12 months period had a positive impact on the wellbeing, cognition and mood of people with young-onset dementia. Specific attention was drawn to the relationship between the wellbeing of participants and their cognition as the results of the study suggested that wellbeing can be maintained despite the presence of a cognitive deterioration. Self-identity and purposeful activity were reported as common themes as benefits of the gardening group, participants felt useful and valued and had a sense of achievement.

## 7. Impact on Specific Populations

Results of a web-based study that covered 1,28,836 children (youth under 18 years old) involved in gardening, primarily with teachers in school gardens, where children involved were generally 12 years of age or under and were growing food crops showed that adults gardening with children reported benefits to children's self-esteem and reduction in stress levels (Waliczek et al., 2000). Many schools are including growing food as an

important addition to the curriculum. Miller (2007) has suggested that when young children are participating in garden activities, they are: (1) communicating their knowledge about the world to others, (2) conveying (and learning to process and manage) emotions, and (3) developing important skills (e.g., initiative, self-confidence, literacy, math, science skills) that will help them be more successful in school and better navigate the world.

Geriatric population and gardening is growing food in an area where the elderly are often more skilled than younger people. Wang and MacMillan (2013) reviewed 22 articles that assessed the benefits of gardening for both community-dwelling and institutionalized older adults. Through various research designs (quantitative and qualitative) and measurements utilized, the results reveal that gardening can be an activity that promotes overall health and quality of life, physical strength, fitness and flexibility, cognitive ability, and socialization. The implementation of various aspects of gardening as health-promoting activities transcend contexts of practice and disciplines and can be used in urban and rural communities as both individual and group activities. Drawing from understanding from Erikson's (1985) Stages of Psychosocial Development, the stage of Generativity vs Stagnation (45 to 60 years) has particular importance. The act of growing food could be used as one of the engagements for healthy negotiation of this stage. Providing and working towards a larger meaning and goal aid in building self-reliance and self-esteem at this stage of life.

A research team from King's College, London, concluded that one of the most powerful factors in curbing crime and vandalism on problem housing estates was the presence of a garden (Lord, 1995). Schools have also reported a decrease in vandalism and an improvement in behaviour when children participate in greening the school grounds. Where primary prevention is too late, food growing can play a valuable role in helping to prevent reoffending. Few people realize that the prison service is already the third largest farmer in the country, and nearly self-sufficient in food. And although food growing is not seen, officially, as having a therapeutic role for many prisoners it undoubtedly does have one (Garnett et al., 1996). Given that 5,000 prisoners are referred for treatment of mental illness each year, there is real potential for linking up the farming work that prisons already do with the needs of the mentally ill. Food growing can also stimulate links between inmates and the community. Such activities help in the development of empathy and foster responsibility.

## 8. Social Interaction

Gardening appeals to people across demographic lines, community gardens can increase the interactions between people who would not normally meet or socialize. Older members of the community work alongside younger members, and all members can be welcoming to people across racial, religious, or ethnic boundaries (Bellows, 2003; Winne, 2008). These benefits have proven to be pervasive through time. Community gardens (Hou et al., 2009) are an important intervention to ensure social interaction and community building.

Many of the community food-growing projects in London have undoubtedly helped improve participants' quality of life, such as the Healing Gardens and Natural Growth projects which have enabled marginalised people to come together, develop skills, confidence and friendships (Garnett, 1999). The Dartford Road allotment site just beyond Greater London in Kent has grown into a hub of community activity. It is now so popular that there is a waiting list. Social events such as barbecues attract many people, and reciprocal arrangements such as bulk-buying and sharing manure are common (Dartford Roads Allotment Association, 1999). Many food growers, in turn, contribute directly to others in society and to the environment. Almost all community projects rely heavily on volunteers. Many allotment gardeners help each other with the work, or share produce.

## 9. Horticulture Therapy

The Horticulture therapy model refers to the use of plants and work in gardens to meet clinically defined goals. Research suggests that Horticulture therapy mediates emotional, cognitive and/ or sensory motor functional improvement, increased social participation, health, well-being and life satisfaction (Söderback et al., 2004). However, the effectiveness, especially of the interacting and acting forms, needs investigation. Growing food has the potential to be used in reformative spaces – it combines the important aspects of physical labour, community building and working, understanding of nurturance and patience, and an intrinsically built in reward system. In 1986/7, over 7,000 people with mental health problems were involved in horticulture. Gardening can be therapeutic for a number of reasons. Gardening therapy meets quite specific government criteria for mental health promotion (Mansell, 1993). These are:

- Community presence: Too often, mentally ill people are segregated, kept away from everyday settings. The advantage of many horticultural

projects is that they are in public places; a volunteer working on such a project in the middle of Battersea Park (Ryan, 1993) commented that after four years, he still had no idea what his fellow gardeners' difficulties were - if any. Such integration helps lessen the stigma attached to people who are 'different'.

- **Community participation:** Gardening requires some form of co-operation, while providing the opportunity for individuals to form more private friendships.
- **Choice:** Horticulture offers a choice of how to work - alone, with a friend, or as part of a team - and what to do. Even small decisions - such as what to plant, or where - can help people attain a sense of independence.
- **Competence:** The opportunity to perform meaningful activities leads to a sense of satisfaction and of self-worth. Gardening requires competence, in simple routines such as scattering seeds, or in complex tasks like pruning or plot design, as does cooking the produce grown. Indeed, many horticultural projects throughout the UK provide training for employment, both in sheltered and in commercial work places.
- **Respect:** Horticultural projects provide a situation where respect for self, others and all forms of life can be learned. The officer at the Battersea project above remarked that even those clients with a history of violent behaviour rarely act in this way in the garden.

## 10. Understandings and Implications

The present work is an attempt to understand the psychological impacts of growing food in urban spaces. The review facilitates some understandings and fosters curiosity on multiple levels.

1. Urban food growing is very much prevalent and is growing. This may be concluded from the various mentioned researches and the fast expanding informal gardeners' networks that are mushrooming in many metropolitans across the world.
2. There are numerous health benefits of growing food. Sustained research and academic interest will help uncover the many potential benefits urban farming has.
3. Agrarian countries like India and other developing nations, that are witnessing rapid urbanization, need be an important focus area. The interest, possibility and impact are bound to be manifold. The historical, cultural relevance and practice of agriculture, the spaces that have

been transformed from farm lands to urban dwellings and the collective psyche in which agriculture is integral component are all factors that make urban farming in developing countries enriching and essential.

4. Mainstream psychology needs to integrate the practice of growing foods and exploring its various benefits in obliterating stress and enhancing well-being. Varied methodologies such as case studies and experiments need to be conducted to better appreciate and understand the impacts of a long practiced healing activity.
5. Community gardening in educational institutes, parks and allotted spaces as well as private food growing initiatives should receive encouragement and support from the state.
6. Research and interdisciplinary academic collaborations will help augment the understanding of the psychological impact of growing food and provide it the much needed impetus and encouragement.

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