RESEARCH ABSTRACTS TO SUPPORT HOSPITAL GARDENS

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1. Cimprich, Bernadine and Ronis, D.L. "An Intervention to Restore Attention in Women with Newly Diagnosed Breast Cancer." *Cancer Nursing*. 26 (4): 284-292 Aug 2003.

Cancer studies looked at how interaction with nature can increase cognitive functioning, the ability to focus and the tendency to seek out new experiences. This dissertation by Cimprich, an RN, studied recovering breast-cancer patients engaged in gardening activity programs. Compared to another recovering group who were not given such an opportunity, the patients who undertook nature activities three times a week for ninety days had far less tendency to complain of mental fatigue, depression, marital problems or a general inability to cope. They scored significantly higher on tests of cognitive acuity than their counterparts. They were far more likely to go back to work full-time and tackle new projects, such as losing weight or learning a foreign language.

2. Cooper Marcus, Clare and Marni Barnes, 1995. *Gardens in Healthcare Facilities: Uses, Therapeutic Benefits and Design Recommendations.* Martinez, CA: The Center for Health Design.

Research sponsored by the Center for Health Design on the use and therapeutic benefits of hospital gardens finds an overwhelmingly positive response from employees, patients, and their family and friends. Of those who were observed and interviewed while in a garden, 95 percent reported a therapeutic benefit. According to the study, this manifests itself in employees being more productive, patients feeling better and having more tolerance of medical procedures, and family and friends feeling relieved of stress.

Four case studies (including user responses); typology of health facility outdoor spaces; and a set of design recommendations for location, way finding, planting, and maintenance are included in the report. Also included are a literature review and a brief historical overview of hospital gardens since the Middle Ages.

3. Cooper Marcus, Clare and Marni Barnes. "Introduction: Historic and Cultural Overview". Chapter 1 in *Healing Gardens: Therapeutic Benefits and Design Recommendations*, Clare Cooper Marcus and Marni Barnes, 1999. Wiley & Sons.

Stress Reduction and Access to Nature: A summary of three exploratory studies of the use and benefit of hospital gardens. Which specific qualities seemed to be helpful in triggering mood change? More than two-thirds of garden visitors mentioned elements of the plant world (trees, flowers, colors, seasonal change, greenery). More than half mention elements that stimulated auditory, olfactory and tactile senses such as birdsong, sound of water, fresh air and fragrances. Psychological or social aspects were noted by 50% of participates. These include describers like

peaceful, escape from work, openness/large, privacy/secret places, oasis, companionship, watching others, knowing it is there. Visual qualities other than relating to plant material were noted by 26% of respondents and 17% of respondents noted a list of practical features.

4. Ulrich, Roger, S. "Effects of Gardens on Health Outcomes: Theory and Research". Chapter 2 in *Healing Gardens: Therapeutic Benefits and Design Recommendations*, Clare Cooper Marcus and Marni Barnes, 1999. Wiley & Sons.

Stress as a major problem for patients, families and staff in healthcare settings is discussed. Also presented is a theory of supportive gardens developed by Dr. Ulrich. He proposes that "gardens in healthcare situations are important stress-mitigating resources for patients and staff to the extent that they foster: 1) A sense of control and access to privacy; 2) Opportunities for social support; 3) Physical movement, exercise and rehabilitation; 4) Access to the nature experience and other positive distractions." (p.37) He advocates for the importance of continuing research---particularly "sound and credible research that shows that gardens can promote improved health outcomes, foster higher patient/consumer satisfaction with healthcare providers and be acceptably cost-effective." (p. 31)

5. Ulrich, Roger S. "Natural versus Urban Scenes: Some Psychophysiological Effects." *Environment & Behavior*, 13(5): 523-556, Sept 1981.

Eighteen students, ages 20-27 years, viewed 60 color slides of each of three types: (1) nature with water (2) nature dominated by vegetation and (3) urban environments without water or vegetation. The information rates of the three slide samples were equivalent. The effects of the slides on alpha amplitude, heart rate and emotional states were measured. The two categories of nature views had more positive influences on psychophysiological states than the urban scenes. Alpha was significantly higher while students viewed slides of vegetation or water than while they viewed urban scenes. There was also a consistent pattern for views of nature, especially water, to have more positive influences on emotional states. Water, and to a lesser extent vegetation views, held attention and interest more effectively than the urban scenes. Implications of the findings for theory development in environmental aesthetics are discussed.

6. Ulrich, Roger, S. "View through a Window May Influence Recovery from Surgery." *Science*. 224 (April 1984): 420-1.

Medical records on recovery of patients after cholecystectomy (gall bladder surgery) in a suburban Pennsylvania hospital between 1972 and 1981 were examined to determine whether assignment to a room with window view of a natural setting might have restorative influences. Twenty-three surgical patients assigned to rooms with windows looking out on a nature scene of trees had shorter postoperative hospital stays, received fewer negative evaluative comments in nursing notes and took fewer potent analgesics than 23 matched patients in similar rooms with windows facing a brick building wall.

7. Wichrowski, Matthew HTR; Whiteson, Jonathan MD; Haas, Francois PhD; Mola, Ana RN, ANP; Rey, Mariano J. MD, Effects of Horticultural Therapy on Mood and Heart Rate in Patients Participating in an Inpatient Cardiopulmonary Rehabilitation Program.**,** *Journal of Cardiopulmonary Rehabilitation*., (September/October 2005): 25(5): 270-274

PURPOSE: To assess the effects of horticultural therapy (HT) on mood state and heart rate (HR) in patients participating in an inpatient cardiac rehabilitation program.

METHODS: Cardiac rehabilitation inpatients (n = 107) participated in the study. The HT group consisted of 59 subjects (34 males, 25 females). The control group, which participated in patient education classes (PECs), consisted of 48 subjects (31 males, 17 females). Both HT sessions and PEC are components of the inpatient rehabilitation program. Each group was evaluated before and after a class in their respective modality. Evaluation consisted of the completion of a Profile of Mood States (POMS) inventory, and an HR obtained by pulse oximetry.

RESULTS: Changes in the POMS total mood disturbance (TMD) score and HR between pre intervention and post intervention were compared between groups. There was no pre-session difference in either TMD score (16 +/- 3.6 and 19.0 +/- 3.2, PEC and HT, respectively) or HR (73.5 +/- 2.5 and 79 +/- 1.8, PEC and HT, respectively). Immediately following the intervention, the HT TMD was significantly reduced (post-TMD = 1.6 +/- 3.2, P < .001), while PEC TMD was not significantly changed (TMD = 17.0 +/- 28.5). After intervention, HR fell in HT by 4 +/- 9.6 bpm (P < .001) but was unchanged in PEC.

CONCLUSION: These findings indicate that HT improves mood state, suggesting that it may be a useful tool in reducing stress. Therefore, to the extent that stress contributes to coronary heart disease, these findings support the role of HT as an effective component of cardiac rehabilitation.

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