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POINT OF VIEW

Benefits of walks in the outdoor gardens of the hospital in critically ill patients, relatives and professionals. #healingwalks☆

Beneficios de los paseos por jardines exteriores del hospital en el paciente crítico, familia y profesionales. #paseosquecuran

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Admission to the Intensive Care Unit (ICU) constitutes a sudden and total rupture with daily life. This includes loss of contact with Nature, and thus with our daily source of necessary sensory stimulation and other benefits that intervene in human physiology.

In the two and a half million years between the appearance of the first species of the genus *Homo* (*Homo habilis*) and the dawn of the industrial revolution, humans have lived and evolved more than 99% of the time in Nature. We are used to living immersed in the natural environment.

Loss of routine contact with the outdoors is therefore an antinatural circumstance. This is not referred to ''wild'' Nature but to ''daily'' Nature, with green spaces and views in the places where we live or close to them: natural light, the sun, fresh air, breeze or wind, the sky, vegetation, water in motion, etc. In 1990, Japanese authors started to investigate the effects of their famous Shinrin-yoku (''forest bathing''). In 2016, Song et al. published a review of 52 articles on the subject with the purpose of demonstrating the physiological effects of Nature as a therapy, assessing physiological indicators such as brain, autonomic nervous system, endocrine and immune activities[1].

In a review published in 2015, Kuo summarized a part of the extensive association between research and health outcomes related to Nature, with the accumulation of evidence of a favorable impact upon disease conditions such as depression disorder and anxiety, diabetes, attention deficit disorder and hyperactivity, infectious, cardiovascular and musculoskeletal diseases, obesity, migraine, vertigo or respiratory disorders[2].

These two mentioned reviews evidenced health outcomes of Nature at both psychological (improved cognitive function, as well as lessened anxiety, depression and stress) and physical level (regulation of the sympathetic and parasympathetic systems with decreased heart rate and blood pressure, lowered cortisol and cytokine levels, increased endorphin output, improved immune response, increased NK lymphocyte counts and faster body recovery from injury or surgeries)[1–3].

Epidemiological studies have already demonstrated lesser health inequalities in populations exposed to greener

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environments, with a decrease in morbidity–mortality and lower prevalences of different cardiovascular, respiratory, musculoskeletal, neurological, gastrointestinal and mental disorders, etc., with particular emphasis on the relation to anxiety disorder and depression[4,5].

On the basis of these observations, since 2006 the American Institute of Architects and the Facilities Guidelines Institute, through their guides for the design and construction of hospitals, recommend the presence of restorative and therapeutic gardens for patients and professionals, with access to sunlight, trees and shade, to afford the possibility of interacting with Nature. For this reason, many healthcare institutions are reconverting spaces and generating open air zones with gardens for patients, families and professionals[6].

References on hospitals and Intensive Care Units

In 1972, Wilson proposed a multifactorial origin of delirium, instead of simply attributing it to patient personality. In this regard, he showed one of these factors to be sensory deprivation, with the recording of twice as many delirium episodes in ICUs without windows versus ICUs with windows. Depression was also seen to double in incidence[7].

Keep et al., in 1980, compared two similar ICUs: one with windows and the other without. The patients in the latter Unit suffered more temporal disorientation, depersonalization, less precise recall of stay, and twice as many episodes of hallucinations and delirium than those admitted to the ICU with windows and natural light[8].

A study published by Ulrich in *Science* in 1984 revealed improved postoperative recovery among patients in rooms with windows opening onto Nature, in the privileged surroundings of a hospital in Oregon, with shorter durations of stay, a lesser need for analgesic medication, and greater satisfaction with the staff[9].

With regard to the healthcare professionals, studies on the use of outdoor gardens for resting periods have evidenced a restorative capacity that can be useful for the prevention of burnout syndrome, with diminished levels of emotional exhaustion and depersonalization[10].

With regard to the families of the patients, in 2019 Ulrich et al. published a new study in a hospital with 442 beds, designing a garden with abundant Nature, and analyzed its impact upon the stress of relatives of patients admitted to the ICU who used these gardens as a place to rest during the visiting periods. Based on the Present Functioning Visual Analog Scales, the authors analyzed stress through the measurement of 6 symptoms: fear, concern, sadness, anger, fatigue and pain. The scores referred to all these symptoms were found to be better than when indoor resting areas were used – with statistical significance being reached in the concrete case of reduced sadness[11].

Our experience

The Department of Intensive Care Medicine of Hospital San Juan de Dios (Córdoba, Spain), applying the Humanization of Intensive Care guidelines of the HU-CI project[12], believes it plausible to implement such therapy, adapting it to the idiosyncrasy of our patients and our environment, with a view to likewise securing positive health outcomes. Accordingly, within our program for rehabilitation and early mobilization of the critical patient, we developed the ''healing walk'' protocol four years ago.

Figure 1 A patient walking through the outdoor gardens of the hospital (reproduced with permission).

Our protocol is freely shared and has been downloaded by many Departments of Intensive Care Medicine throughout the world. It can be accessed at: https://drive.google.com/file/d/1yRapAB_3CpNud1vNxvStoeq4jXXObmFi/view, and defines objectives, indications, contraindications and procedures, with the recommendation of its standardized use as another measure of treatment and care.

In view of the broad range of conditions in which the patients may be found, our treatment and care checklist includes a daily and individualized assessment, with walks outdoors when the benefit/risk ratio is clearly favorable. In this regard, by closely following the protocol (including adequate and personalized equipment for each walk) and strictly assessing each case, we have recorded no serious adverse events during these walks outdoors.

Video: https://www.youtube.com/watch?v=nlwKgOAZcnA&t=17s

Although leaving the ICU is not possible in the case of certain patients, it is indeed feasible in many others. According to our criterion, the ideal walk should last at least 15 minutes, surrounded by vegetation and in the open air (Fig. 1). This is not always possible; as a result, the protocol describes other options adjusted to the circumstances of the patient or the weather.

Many hospitals have no green zones, but this does not mean that they should renounce to offering such therapy. Rooftops, areas with windows, terraces or outdoor parking lots can also offer benefits for patients through natural light, fresh air, sunlight, a view of the clear sky, or other elements of daily life in Nature.

After walking over 400 patients, and considering the lack of published results, our experience indicates that the benefits evidenced in healthy individuals and in non-critical patients could be extrapolatable to patients admitted to the ICU. Accordingly, it would be interesting to carry out studies in this regard, with a view to demonstrating positive effects in terms of mood state and orientation, the

incidence of delirium, depression, anxiety and fear, or the need for analgesics and sedatives. We also raise the possibility that such therapy could even contribute to patient recovery from weakness acquired in the ICU, as a consequence of increased implication of the conscious patient in the physiotherapeutic process, allowing faster weaning from ventilatory support.

Most interestingly, the demonstration in the critical patient of certain benefits of the ''healing walk'' could have important repercussions in terms of shorter stay and a lesser incidence, severity or duration of post-intensive care syndrome.

It also would be interesting to confirm the positive results perceived in both the relatives who accompany the patients during these walks and in the professionals who work in the ICU.

Having reached this point, profound reflection causes us to regard the reconversion of hospital zones into gardens that are safe and accessible to patients, their families and professionals as a measure that should be contemplated by Hospital Management – considering the benefits demonstrated in the literature, the current trends in healthcare, and the relatively low costs involved.

Is it necessary to prove something that seems obvious? Surely yes. But until studies in this line are made, I would like to recommend those clinicians who have the possibility of doing so, to check the effects of such therapy for themselves.

Conflicts of interest

The author declares that he has no conflicts of interest.

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