

The Effect of Nature-Based Therapy May be Dose-Related: A Prospective Cohort Study of Nature-Based Therapy of Long-Term Patients Suffering from Stress-Related Mental Illness

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Commentary

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ABOUT THE STUDY

Stress-related mental illness is increasing worldwide and leads to long-term illness. Approximately one billion people globally suffer from some mental disorder, and the increase in the number of people suffering from mental illness is swift ^[1]. Most affected are women between the ages of 30 and 50, and the need for rehabilitation and return to work for these patients is great ^[2]. Research indicates that being in nature can lead to stress recovery ^[3,4]. The question is whether nature-based therapy can rehabilitate people suffering from long-term stress-related mental illness, and how much time is necessary for recovery in order to return to work.

The research was carried out at the Alnarp Rehabilitation Garden, which is a specially designed health garden on the Swedish University of Agricultural Sciences campus in Alnarp, where the participants in the study were treated

by a licensed rehabilitation team: occupational therapist, psychotherapist, physiotherapist and horticultural therapist [5]. The intention was to examine three cohorts of participants prospectively (Figure 1).

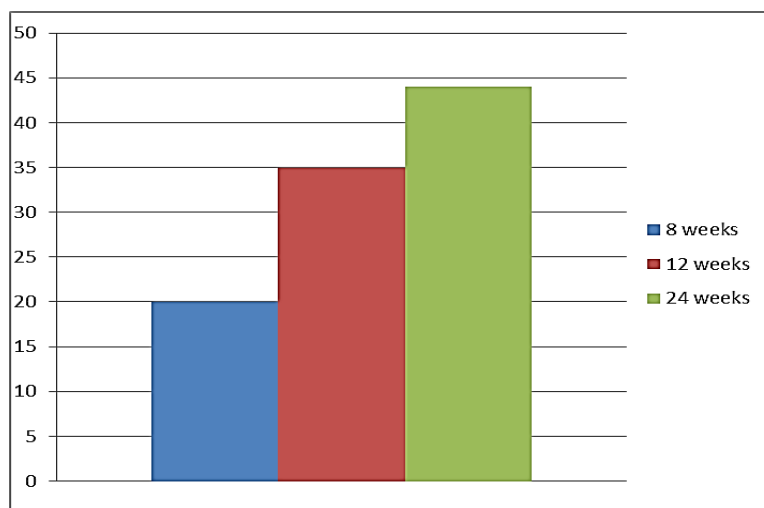
Figure 1. Alnarp Rehabilitation Garden in Sweden, offering nature-based therapy for individuals suffering from stress-related mental illnesses (map by Gunnar Cerwén).



Through a natural experiment, we could offer three different lengths of a nature-based rehabilitation program [6]. Participants were referred to Alnarp Rehabilitation Garden by three local social security authorities that granted different lengths of rehabilitation programs: 8 weeks, 12 weeks and 24 weeks. The length of the program was determined by which local social security agencies they belonged to, not the severity of the participants' illnesses. This meant that three cohorts were prospectively followed over three different periods: Eight weeks ($n=44$), Twelve weeks ($n=48$) and 24 weeks ($n=14$). All participants completed the full intervention. The primary outcome was return to work. Other outcomes were occupational functioning, personal control and sense of coherence [7,8].

The results showed that all three rehabilitation efforts produced significantly good results, but that longer nature-based rehabilitation led to significantly better results for all outcomes. The 12-week program produced 75% greater return to paid work and the 24-week program 120% greater return to paid work than the 8-week program (Figure 2).

Figure 2. Proportion of paid work, mean values (y-axis), one year after starting rehabilitation, for patients participating in NBT with different lengths of rehabilitation time.



There was a significant positive relationship between treatment time in the rehabilitation garden and return to work. Allowing patients to stay longer led to clinically meaningful improvements, resulting in a higher rate of return to work. Moreover, the result can be interpreted as the effects leveling off after twelve weeks, indicating that the health-economically most beneficial effects lie somewhere between twelve and twenty-four weeks.

This effect could be due to the following relationships: Previous studies show that the therapeutic effect in rehabilitation gardens follows a specific pattern, where patients first need to settle into the environment, then slowly heal and acquire new capacities [9,10]. However, several recent studies suggest that for this therapeutic effect to be achieved, the gardens need to contain several different types of qualities so that the patients can receive the right kind of support from the surrounding physical environment [11,12]. According to these studies, the environment needs to convey calm and security, but also curiosity and interest. These enriched environments can theoretically initiate calm and connection relationships, accelerate healing as well as initiate existential approaches and create new coping strategies [13]. It takes time for this healing process to start working, and for most patients at least 12 weeks seem to be needed.

The sensory enrichment of the environment and its effects on patients have begun to be explored, and more studies are underway [14,15]. Likewise, the role of therapists in the supportive environment has been investigated in various studies, and more studies are underway here as well [16,17]. For example, a registry study in Scania, southern Sweden, will compare nature-based rehabilitation programs with regular rehabilitation programs, such as multimodal rehabilitation and CBT during the years 2002-2022, regarding return to work and healthcare consumption. In that study, there are also different lengths of nature-based programs, usually eight or twelve weeks. This study will also provide the basis for a health economic calculation. The answer to that study will come in about two years. What is also needed is more knowledge about how staff, such as occupational therapists, psychotherapists and horticulturists, can use gardens as therapeutic tools. In addition, research is needed on the body's response to rehabilitative environments, focused on bodily mechanisms such as the release of oxytocin and cortisol; measurement of blood pressure and HRV, and examination of possible neurogenesis of the brain.

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