

The influence of forest therapy camp on depression in alcoholics

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Abstract

Objectives To evaluate the effect of a forest experience on the levels of depression of alcoholics.

Methods Prior to the study, 92 alcoholics were divided into treatment and control groups. During the summer of 2009, the treatment group participated in a series of forest therapy programs, while the control group followed their normal daily routines. Both groups were re-tested upon completion of the program by the treatment group and the depression levels compared.

Results There was a significant improvement in the depression level of alcoholics who had participated in the forest camp program (treatment group). Those participants in their 40s who had severe levels of depression at the beginning of the program showed the most significant improvement during the program experience.

Conclusion The forest therapy camp experience can considerably reduce and ameliorate the depression levels of alcoholics.

Keywords Alcoholics · BDI · Depression · Forest experience · Healing program

Introduction

In modern society, individuals spend most of their time drawing on their own resources to deliberately direct attention or pay attention to various issues [1]. The information- and high technology- based demands placed upon

most people in everyday life are resulting in mental fatigue. In contrast, natural environments, such as forested landscapes, seem to effortlessly engage people's attention, allowing them to be in a place where they do not have to actively pay attention. For this reason, Kaplan [1] suggests that contact with nature has a restorative function. Several investigations support Kaplan's theory, indicating that exposure to a forest environment can effectively reduce stress [2, 3].

Alcoholism is a major psychological problem in South Korea. Recent changes in the socio-economic status of many South Koreans have resulted in major social and health problems related to alcohol (mis)use. There is substantial evidence that heavy alcoholism is associated with the development of psychological symptoms, such as depression and anxiety. In the last two decades, the body of knowledge on the physical and psychological aspects of alcoholism has improved considerable. Empirical studies investigating the relationships between alcoholism and a variety of concerns, such as depression, anxiety, low self-esteem, and difficulty with intimate relationships, have become increasingly more numerous [4]. Among these are empirical studies on the psychologically restorative effects of the direct effect of forest environments, including wilderness areas [5], urban forest parks [6], nearby trees and grassy areas close to public housing [1], and even the view of a forest through windows [7]. If contact with forest is attentionally restorative, how then might an attentional restorative program mitigate the depressive symptoms of alcoholics? The study reported here was designed to investigate the relationship between the experience of alcoholics participating in a restorative forest program and the effect of this program on their depression levels. Our interest was in the degree of changes in self-reported depression after completion of a 9-day forest program.

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Methods

Study subjects

The subjects for this study consisted of 92 adult alcoholics enrolled in the Korean Alcohol Research Center in Chungbuk Province, South Korea. The Korean Alcohol Research Center is a national inpatient alcohol rehabilitation institute founded in 1997. All participants were chronic alcoholics whose drinking problems were severe enough to necessitate inpatient treatment. Only participants who were detoxified and oriented, but had not yet begun any psychological treatment, were included in the sample. Participants were excluded if they met criteria for any psychoactive substance dependence besides alcohol or if they had a severe medical illness. All 92 participants who complied with the above inclusion criteria consented to participate. Informed consent was obtained from all participants on the basis of a procedure that is officially approved by the Research Ethical Committee of Chungbuk National University. The participants were randomly assigned to a treatment and control group, respectively. This random assignment process resulted in 47 treatment participants and 45 control participants.

To examine whether there were any differences in the characteristics of the alcoholics in the two groups, we initially performed several *t* tests. As shown in Table 1, there were no statistically significant differences in the age, education, and alcohol dependence levels between the participants of the two groups.

Instruments

The Beck Depression Inventory (BDI) was employed to determine the depression levels of the alcoholics, as this was a major dependent research variable in this study. The BDI is a self-report measure of 21 items in a multiple choice format. Score can range from 0 (no depression) to 63 (high depression). This measurement tool has been used extensively in clinical research and demonstrates validity and reliability.

Study areas

The 9-day forest healing camp was conducted and data for this study were collected from Saneum Recreational Forest in South Korea. A primary reason why this forest was selected for the study is that the recreation forest was designated as a “model forest for human health” by the Korea Forest Service.

The study area (Saneum Recreational Forest) is located in Kyunggi Province, about 80 km away from Seoul, the capital of South Korea. Saneum Recreational Forest has 2,140 ha of forest area mainly composed of oaks and pine. The numbers of visitors was 76,559 in 2007.

Data collection

To investigate the efficacy of the forest experience on the depression levels of the alcoholics, a 9-day forest therapy program was designed and conducted during the summer of 2009. The forest healing program was designed to meet the following objectives: (1) to provide exercises representative of the forest therapy programs described in the literature, specifically those exercises prescribed to aid in psychological development; (2) to be representative of Kaplan’s theory denoting the mechanisms of psychological benefits from forest experiences [1]; (3) to accompany the application of other therapies, such as meditation, exercise, and counseling. Three treatment sessions were developed for the treatment (experimental) group. Each session of the camp was designed to achieve different goals. A summary of each session of the camp is presented in the Table 2. As it can be seen from the Table 2, each session of the camp was designed to achieve different goals.

A set of questionnaires, including a personal-profile and the Korean version of the BDI, was administered and completed by the participants in order to collect baseline data during the orientation at the first session of the camp. For comparative data collection, the same type of questionnaire was distributed to each participant at the end of the final session of the camp.

Table 1 Background characteristics on the treatment and control alcoholics participants

Characteristic	Treatment group (<i>n</i> = 47)	Control group (<i>n</i> = 45)	<i>t</i>	Probability
Age	44.66 ± 3.90	45.87 ± 3.85	−1.492	0.139
Education ^a	13.26 ± 2.73	13.27 ± 2.51	−0.021	0.984
Alcohol dependence level ^b	37.28 ± 7.22	37.17 ± 6.71	0.068	0.946

Values for treatment and control groups are presented as the mean ± standard deviation (SD)

^a Years of formal education

^b Based on scores of the Alcohol Dependence Scale (ADS). Total scores can range from 0 to 47, with the higher the value, the greater the dependence

Table 2 Summary of forest therapy camps

Session	Duration (days)	Goal	Activities
First	3	Interacting with nature/forest	Nature–game, nature–interpretation, etc.
Second	3	Challenge	Mountain-climbing, tracking, orienteering, etc.
Third	3	Self-introspection	Nature-meditation, Counseling in forest environment, etc.

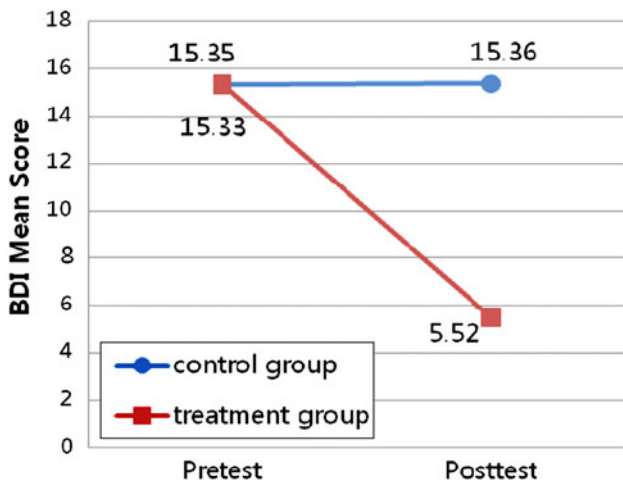


Fig. 1 Pre-test–post-test Beck Depression Inventory (BDI) mean scores for the treatment and control groups

Table 3 Differences in the change in depression scores (Beck Depression Inventory) between the pre- and post-test based on a number of respondents’ personal variables

Variables	df	F values	Probability
Age	3	3.07	0.041
Education	3	0.37	0.775
Marital status	2	0.65	0.529
Base-line depression levels	2	14.88	0.001

Statistical analysis

Statistical analysis was performed using Windows SPSS (ver. 15; SPSS, Chicago, IL). The descriptive analysis was presented as means and standard deviations (SD) for continuous measures and as frequencies for categorical measures. Group comparisons for outcome measures were conducted using *t* tests and analysis of variance (ANOVA) for continuous measures and χ^2 tests for categorical measures.

Results

Socio-demographic characteristics of the subjects

The principle demographic characteristics of the 92 participants taken into consideration were: age (mean 45.26 ±

3.89 years); gender (84 males, 8 females); education (3 elementary school graduates, 6 junior high school graduates, 45 high school graduates, 38 college or university graduates); marital status (33 unmarried, 35 married, 24 divorced).

Forest therapy camp experience and improvement in the depression level of the alcoholics

Scaled data on ratings of depression according to the BDI were collected prior to the forest camp and upon completion of the forest camp by the treatment group. The change from pre-test (baseline) to post-test is presented in scale score terms, and the mean difference was tested for statistical significance using a two-tailed *t* test. The mean pre-test scores (BDI) before the first session of the forest program were 15.35 (treatment group) and 15.33 (control group). There was no statistically significant difference between the two groups. According to clinical criteria in Korea, BDI scores between 14 and 20 are classified as moderate depression. By the end of the forest camp, the mean post-test score (BDI) for treatment group was 5.52, a score that indicates no depression according to the clinical criteria used in South Korea. In comparison, the mean post-test score (BDI) for the control group was 15.36. For the treatment group, the mean difference in BDI score between pre- and post-forest program experience was 9.83. According to the *t* value, this difference was statistically significant ($t = -6.27$; $p \leq 0.001$). Therefore, we concluded that the forest program experience decreased the depression levels of the participating alcoholics (see Fig. 1).

In addition to comparing the BDI scores, we also analyzed a number of relatively objective variables (i.e., difficulty in falling and difficulty in staying asleep). The result of the χ^2 analysis, which was based on self-reporting, indicated that, relative to alcoholics in the control group, the alcoholics with forest camp experience had less difficulty in falling asleep ($p \leq 0.001$) and had less difficulty in staying asleep ($p \leq 0.009$).

To investigate the role of the personal variables, such as gender, education levels, marital status, and base-line depression levels, a series of ANOVA was performed. As can be seen from Table 3, alcoholics in their 40s showed the greatest improvement in BDI scores (11.09), followed

by participants in their 30s (6.83) and 50s (3.11). The severity of the depression levels of the alcoholics before the forest camp played a significant role on their depression levels upon completion of the forest program. Alcoholics with higher depression levels before the program tended to improve their depression levels by completion of the forest program more so than those who started with lower depression levels. However, the education level and marital status of the alcoholics did not play any significant role in the improvement of their depression levels.

Discussion

In this study, we examined how a forest program experience can be beneficial to alcoholics and how it can improve their depression levels. The study cohort comprised 92 alcoholics who were detoxified and oriented, but who had not yet begun any psychological treatment. The results indicate that the forest program experience played a significant role in the amelioration of the depression levels of these alcoholics. Consistent with previous research on nature's ability to improve mood and reduce stress, produce positive feelings, boost feelings of energy, have positive psychological effects, and increase healing [1–3], we found that the depression levels of the participating alcoholics decreased after their forest program experiences.

The forest provides a refuge from the artificial and man-made constructions that exist in our society, and the forest environment clearly occupies a prominent position among most individual's favorite places. Moreover, the forest environment seems to be particularly closely associated with restorative outcomes. The feelings most frequently associated with a desirable location and its contribution to psychological well-beings are relaxation, calmness, and

comfort, with happiness, enjoyment, and excitement being frequently mentioned. Because people tend to forget their worries and reflect on personal matters more so in the forest, it has been suggested that this environment is vital for reducing depression levels [6].

The findings in this study provide strong evidence for the potential effect of the forest environment on depression levels, a topic that has been largely unexplored. Further studies should include different types of participants undergoing different types of experiences at different locations, a wider inventory of disposition items, and variables that define different aspects and components of the forest experience benefits, including descriptive information on the benefits of forest.

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