

AN ORGANIC APPROACH TO STRESS RECOVERY AMONG MIDDLE-AGED WORKING FEMALES WITH INDOOR PLANTS

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Abstract

In the modern era, when the persistent pace of life and employment expectations may have a detrimental effect on mental health, an ancient connection between people and the environment has produced a ray of hope. Nature has been our constant provider, providing nutrition and life's necessities. Workplace stress management has become an important topic in the present day. Elements of the natural world, such as indoor plants, might help people get more engaged with nature, enhancing well-being and psychological health. This is due to the strong connection that humans have with nature. The current study attempts to carefully assess the usefulness of interaction with indoor plants in psychological stress reduction. This study looked at how indoor plants influenced the ability of middle-aged working women to recuperate from psychological stress. As an aspect of the study's experimental research design, participants' workplaces were provided with medium-sized snake plants. To measure the participants' stress levels, the Perceived Stress Scale (PSS), an eminent stress assessment tool was employed. The study assesses the stress levels of participants before and after placing a snake plant on their desks or their line of sight. The study's sample included thirty female office employees between the age of 35 and 50, divided into three age categories: 35-40, 40-45 and 45-50, who were chosen by using a random sampling approach. For data analysis, the Statistical Package for the Social Sciences (SPSS) and applicable statistical procedures in keeping with the study's aims were utilized. According to the findings, adding plants lowered total stress levels by 26.6%. The findings of this study contribute to workplace stress management insights, guiding employee stress reduction. Further, encourage research into tailoring indoor plant effects for precise psychological well-being interventions. This study explores how indoor plants can be helpful in recovering middle-aged working women from stress, providing an organic approach.

Keywords: Workplace stress, Snake plant, Stress reduction, Plant therapy, PSS, Indoor Greenery, Women's Mental Health.

Introduction

Stress is a common trouble in today's hectic work environment, especially among middle-aged women attempting to manage their professions (Zhang et al., 2023). This study looks at indoor plants as a natural approach to stress recovery specifically, the Snake plant which is well-known in plant therapy for its relaxing properties. The Perceived Stress Scale (PSS) was used to determine how successful this natural strategy is. Having indoor plants, such as the Snake plant may be a simple yet effective approach for middle-aged women to feel more proficient at working (Liang et al., 2022; Bhatt et al., 2019).

Within this context, psychological stress is defined as emotional or mental pressure caused by difficult conditions (Sun et al., 2020). It frequently occurs when people regard their resources as insufficient to complete their commitments, resulting in a sensation of tension (O'NEIL et al., 1981; Petersen et al., 2023). A subtype known as work stress arises as a result of the pressures of professional commitments, which include elements such as deadlines, high

workloads, and interpersonal difficulties (Purdy, 2023; Mauno et al., 2023; Fahmi et al., 2022). Balancing these expectations against limited resources may have a significant influence on one's mental health, highlighting the critical need for good management of work-related stress to preserve overall well-being and productivity (Chu et al., 2022; Niinihuhta et al., 2022).

Through the embrace of effective techniques, individuals can skillfully navigate and regulate their levels of stress (Alhasani et al., 2022). Stress recovery is the process through which a person's mental and physical systems return to a condition of balance or equilibrium after enduring stress. It entails the recovery of one's physical and psychological wellness after stressful events or situations (Yin et al., 2022; Smyth et al., 2023).

Having indoor plants around has many positive effects on psychological and physical health (Archary et al., 2022). Snake plants, with their air-purifying properties and aesthetic appeal, have garnered attention for their ability to create quiet settings, ease anxiety and reduce stress (Shrivastava & Raj, 2023; Krishna et al., 2023). The stress recovery through indoor plants represents an increasing awareness of how nature's presence in our everyday contexts may assist in effective stress reduction and psychological well-being. (Liu et al., 2022; Yin et al., 2020). Also, plants in the office improve well-being and decrease psychological stress (Toyoda et al., 2020). The natural components provide a tranquil environment, which may promote relaxation and improve mood (Han et al., 2022; Liu et al., 2022). Although the specific processes remain unknown, the presence of greenery appears to improve stress management and job satisfaction among female workers (Thatcher et al., 2020).

There is a significant inverse relationship between greenery and stress levels, with a greater green environment resulting in lower stress levels (Wang et al., 2019; Reyes-Riveros et al., 2021). Women have been found to have greater stress levels than males interestingly (Brivio et al., 2020; Graves et al., 2021; Hall & Knuth 2019). The proportion of green space effects had a positive impact on women by reducing the mean stress level (Elsadek et al., 2019). According to a study women who lived more than one kilometer from green spaces reported greater stress levels and worse satisfaction with their health and quality of life than those who lived nearby (Bärg, 2019; Krottje, 2022).

For middle-aged working females, Introducing indoor plants inside an office setting can have a variety of good effects on middle-aged working ladies' well-being and productivity (Aydogan & Cerone, 2021; Elsadek & Liu, 2021).

Plants in the surroundings can assist in enhancing air quality by eliminating pollutants and raising oxygen levels (Berger et al., 2023). Greenery is especially advantageous for middle-aged women, who may be more prone to respiratory problems or other health difficulties (Ghoma et al., 2022; Gubb et al., 2022). It is important to highlight, however, that the specific influence of plants in the office on middle-aged working females may differ based on personal tastes and workplace settings (Xie et al., 2022; Belloni et al., 2022).

There are some theories that relate to nature and psychological stress. Stress reduction theory (SRT) and attention restoration theory (ART) are two well-established theories that support the positive mental impacts of exposure to nature (Sedghikhanshir et al., 2022). Both of these theories believe that regular exposure to nature (such as trees, grass, plants with flowers and other types of greenery) can improve mental health by hastening recovery from stress and mental exhaustion. If stress is left untreated it can impair mood, self-control, social relationships and the ability to achieve personal goals (Gaekwad et al., 2023; Burn & Passmore, 2022; Lin et al., 2023; Mostajeran et al., 2023).

Keeping plant indoors is a long-established practice. Though not much is known regarding the psychological advantages, it appears that being among living creatures made people feel comfortable, had low-stress levels at peace and improved their levels of good energy

(Moslehian et al., 2023; Samudro et al., 2022). It has been proven that participating in horticultural activities reduces stress and promotes relaxation (Sia et al., 2022). There have been insufficient formal and high-quality assessment studies to reach definite conclusions on the usefulness of horticulture therapy for people suffering from mental illnesses (Ainamani et al., 2022; Egerer et al., 2022).

In Pakistan, lush green landscapes have long been associated with a strong cultural respect for their soothing effect on mental well-being (Baloch et al., 2022; Whitman concept 9). Despite Pakistan's agricultural heritage, the psychological benefits of greenery are occasionally overlooked. Furthermore, indoor plants have the ability not just to improve mental well-being but also to increase workplace productivity and creativity (Kavesh et al., 2023; Choudhry et al., 2018). While agriculture is a vital component of Pakistan's economy (Khan et al., 2023). The deep psychological advantages of greens have yet to be completely recognized. Nonetheless, it is critical to emphasize that these improvements in the office environment may be transformational, leading to increased job performance and a more rewarding work experience, particularly for middle-aged Pakistani women (Majeed et al., 2023; Alsubaie, 2023; Viertiö et al., 2021). The intersection of Pakistan's rich agricultural tradition with the previously undiscovered psychological benefits of greenery gives an intriguing chance to improve the overall quality of life and job satisfaction (Hassan et al., 2020; Pinzone et al., 2019).

This study addresses a gap in existing research by looking at how indoor plants affect stress recovery in middle-aged working women. While studies acknowledge the advantages of green surroundings for stress reduction, there is a dearth of research concentrating on the specific stressors encountered by this group and how indoor plants could serve as a tailored remedy. This study intends to close this gap by investigating the possible impacts of indoor plants (the Snake plant) on stress recovery of middle-aged women at work.

To achieve the stated research aims, demographic data such as age, job type and subjective stress level were collected at the baseline. PSS (Perceived Stress Scale) standardized questionnaire was used to evaluate stress levels and explore how different conditions impact one's feelings and perceived stress. The Perceived Stress Scale (PSS) is a traditional stress evaluation tool. The items on this scale were designed to elicit participants' feelings and ideas from the previous month. It also include questions on an individual's stress and overall state of mind. This scale was initially created by (Cohen et al., 1983; Lee, 2012).

Methodology and Study design

This research followed a qualitative approach and used an experimental research design that did not include a control group. Participants were divided into three age groups (35-40, 40-45, and 45-50), and their felt stress levels were assessed using the felt Stress Scale (PSS).

Target Population and Sample Size

The target population for this study comprised about 500 working females who had their own offices at the University of Agriculture Faisalabad, Pakistan A random sample of 30 working female participants was collected for the study.

Data collection Procedure

Data was collected individually by the researcher. Prior to giving out this experiment guide, the researcher visited every respondent and described the purpose of the research.

Statistical Techniques and Methods

This study used descriptive information to explain and summarize the facts, however, the paired t-test was used to assess the connection, correlation and significance of the treatment.

Additionally, SPSS software was utilized as a tool for conducting statistical analyses in the study.

Procedure

At the beginning of the study, participants were selected through a random sampling technique, ensuring that the willingness of participants to participate in the study was a key factor. The participants were then requested to fill out a Perceived Stress Scale (PSS) questionnaire, aimed to measure their individual levels of stress. The testing process followed an individual basis to maintain the reliability of responses.

Participants were made aware that the purpose of the survey was to study psychosocial stress levels in the workplace and to investigate the possible usefulness of indoor plants in promoting stress recovery. The assurance was provided that the survey responses would remain completely anonymous, protecting their privacy.

Following that, participants in the research were asked to complete a PSS questionnaire. Early findings from the pre-testing were gathered and analyzed to aid in the preparation process before giving the indoor plants. This research enabled the identification of different stress levels in three age groups: 35-40, 40-45 and 45-50. Based on questionnaire replies, these levels were classified as low, moderate and high respectively.

The next stage of the study consisted of the introduction of medium-sized snake plants inside the workplaces of the participants. The plant was around 15 to 20 cm tall and 7 to 10 cm wide, measured from the surface of the desk to the top of the plant. These measurements were set to ensure that there was still adequate room on the desk for comfortable working. The plant size selection was based on research by Hasegawa and Shimomura (2009), who claimed that not having adequate space for plants on desks might result in detrimental impacts on office workers, such as pressure. Each participant was given one of these plants, with particular instructions written on the pot.

Three important points were highlighted in these instructions: 1- Spend at least 5 minutes each day interacting with the plant. 2- Maintain the distance of the plant within 1 meter of your vision. 3 Water the plant at least once a week.

Importantly, participants were selected in a manner such that their offices do not have a natural view of the outside and they did not have any indoor plants in their office.

The research lasted 30 days. At the end of this period, individuals were given the standardized PSS questionnaire again. This post-assessment was aimed to determine if the presence of the snake plant, had any stress-reducing or stress-recovery effect on the participants.

Results and Discussion

This section presents the data analysis and findings of the research challenges. It explores the effects of indoor plants on stress reduction among female working adults, considering different age groups and stress levels.

Participant Characteristics: All 30 participants in the study were females and they were equally distributed among three age groups: 35-40, 40-45 and 45-50 years.

Distribution of participants according to Psychological Stress Levels (Before Treatment):

The participants' psychological stress levels were categorized as low, moderate and high. The distribution before treatment was as follows: Low-stress level: 0 participants (0.00%), Moderate stress level: 26 participants (86.7%) and high-stress level: 4 participants (13.3%) This initial assessment indicated that the majority of participants experienced moderate stress levels. The mean perceived stress score was calculated to be 21.267, with a standard deviation of 4.471 and a standard error mean of 0.816. This mean score suggested that the overall stress level among female working adults was within the moderate to high range.

Prevalence of Moderate to High-Stress Levels: An observation from the initial assessment showed that a significant proportion of participants (80.74%) reported moderate to high stress levels. This indicated a noteworthy prevalence of stress among female working adults.

The first hypothesis aimed to examine whether interacting with indoor plants would lead to a reduction in stress levels among female working adults. The analysis demonstrated that after treatment, there was a reduction in stress levels across all categories. Specifically, the low stress level decreased by 13.3%, the moderate stress level decreased by 10.1%, and the high-stress level decreased by 3.2%. Collectively, this led to an overall decrease of 26.6% in stress levels.

Impact of Treatment on Stress Levels: The reduction in stress levels after treatment was further examined quantitatively by applying a t-test. The pre-assessment stress level was 80.74% and after the treatment, it decreased to 54.14%. This indicated a substantial decrease of 26.6% in the overall stress score. The mean scores of stress levels were compared between the pre-assessment and post-assessment phases: The pre-assessment mean was 21.2667 and the Post-assessment mean was 19.3333. The corresponding standard deviations were 4.47162 and 4.51307, respectively. The significance of the treatment was measured as 0.002, indicating a positive effect, although of relatively low significance. The correlation between pre and post-treatment scores was 0.547, signifying a positive correlation between the two.

Table 1 Comparison of stress levels of participants before and after the treatment

Standard PSS scale rating: 0-13 = low-stress; 14-26 = moderate stress; 27-40 = High stress

Stress level	n in Pre-Assessment	n in Post-Assessment	% Pre-Assessment	% Post-Assessment	Difference
Low	0	4	0%	13.3%	13.3%
Moderate	26	23	83.4%	73.3%	10.1%
High	4	3	16.6%	13.4%	3.2%
Total					26.6%

Mean= 21.267 Std. Deviation = 4.471 Std. Error Mean = 0.816 n = 30

Interpretation:

The findings of the study align with the hypotheses and contribute to the understanding of stress reduction through interaction with indoor plants. The data indicated that the presence of indoor plants significantly decreased stress levels among female working adults. Furthermore, a significant reduction was observed in moderate to high stress levels, emphasizing the potential benefits of such interventions for workplace well-being.

The Reduction of Stress Levels of Participants after Treatment in All Three Age Groups:

In line with the second hypothesis, which intended to determine if the age group of 35-40 would experience a greater reduction in psychological stress being exposed to indoor plants, this study examined the effectiveness of this intervention across three diverse age groups from 35-40, 40-45 and 45-50 were subjected to pre-and post-assessments, enables the researcher to highlight the influence of indoor plant exposure on participants' stress levels. The parts that follow provide a full overview of our findings, demonstrating the level of psychological stress

reduction accomplished within each age group and eventually, offer insight on the varied effects of this therapeutic intervention.

Stress levels of the participants before and after the treatment of the age Group (35-40):

Participants aged 35-40 were evaluated before and after the treatment. Table 2 indicates that treatment resulted in a 20% reduction in low-stress levels, no change in moderate stress levels, and a 20% reduction in high-stress levels in the 35-40 age range. Overall, stress levels were reduced by 40%, demonstrating the treatment's effectiveness in reducing stress in this age group.

Table 2 Comparison of stress levels of participants after the treatment in age group (35-40)

Stress level	n in Pre-Assessment	n in Post-Assessment	% Pre-Assessment	% Post-Assessment	Difference
Low	0	2	0	20	20%
Moderate	8	8	80	80	0%
High	2	0	20	0	20%
Total					40%

Stress levels of the participants before and after the treatment of the age group (40-45):

For the age group of 40-45, 80% Table 3 indicates that in the age group 40-45 years, low-stress levels reduce up to 10%, moderate stress levels decline up to 10%, and severe stress levels decrease 0% after therapy, the total stress level drops by up to 20%.

Table 3 Comparison of stress levels of participants after the treatment in age group (40-45)

Stress level	n in Pre-Assessment	n in Post-Assessment	% Pre-Assessment	% Post-Assessment	Difference
Low	0	1	0	10	10%
Moderate	8	7	80	70	10%
High	2	1	20	20	0%
Total					20%

Stress levels of the participants before and after the treatment of the age group (45-50):

For the participants aged 45-50: Table 4 indicates that low-stress levels were reduced by 10%. Moderate stress levels fall by 20%, whereas high stress levels fall by 10%. Overall stress level reduce up to 40% after therapy.

Table 4 Comparison of stress levels of participants after the treatment in age group (45-50)

Stress level	n in Pre-Assessment	Nn in Post-Assessment	% Pre-Assessment	% Post-Assessment	Difference
Low	0	1	0	10	10%
Moderate	10	8	100	80	20%
High	0	1	0	10	10%
Total					40%

Overall Impact on Different Age Groups: Summarizing the stress reduction across the age groups: Table 5 indicates that treatment reduces stress levels by up to 40% in the 30-40 age

group, 20% in the 40-45 age group and 40% in the 45-50 age group, making treatment most effective in the 45-50 age group. The therapy's significance in the age group (30-40) is 0.293, in the age group (40-45) is 0.064, and in the age group (45-50) is 0.293, indicating that the treatment has a more significant impact in the age groups (35-40) and (45-50).

Table 5 Total difference in stress levels of participants after the treatment in accordance to age

Age	Low	Moderate	High	Total Difference	Cohen's d	Significance
35-40	20%	0%	20%	40%	0.385	.293
40-45	10%	10%	0%	20%	0.818	.064
45-50	10%	20%	10%	40%	0.944	.293

Theoretical Implication:

The outcomes align with the second hypothesis and suggest that individuals in the age group of 35-40 and 45-50 experience the most remarkable reduction in stress levels when exposed to indoor plants. This could be attributed to their life stage and a higher inclination toward nature-based interventions as they age. These results reinforce the notion that interventions should be tailored to specific age groups for optimal effectiveness in promoting mental well-being.

Conclusion

In conclusion, this study demonstrates that indoor plants have a significant positive impact on middle-aged working women's ability to cope with psychological stress. The observed reduction of approximately 26.6% in stress levels over a month highlights their stress-reducing potential. Moreover, this benefit remains consistent across age groups (35-40 and 45-50), emphasizing the universal applicability of indoor plants for stress recovery. Participants enhanced feelings of relaxation, satisfaction and overall well-being further underscore the psychological benefits of indoor plants. Overall, this research supports the notion that incorporating indoor plants can be a straightforward and effective strategy to enhance well-being and alleviate stress among middle-aged working women.

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