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AN ANALYSIS ON THE PSYCHOLOGICAL AND ENVIRONMENTAL EFFECTS OF WOMEN'S INDOOR ORNAMENTAL PLANT USE DURING THE COVID-19 PANDEMIC

Kübra Yazici[1*]

[1*]*Yozgat Bozok University, Faculty of Agriculture, Department of Landscape Architecture, Yozgat, Türkiye;*

[*]Corresponding Author Kübra Yazici**,** e-mail: k-yazici-karaman@hotmail.com; kubra.yazici@yobu.edu.tr;

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ABSTRACT

The pandemic has led to radical changes in the daily living habits of individuals and transformed their residences into not only a shelter but also a place of work, rest, and social interaction. Indoor ornamental plants are considered an important component in the redesign of living spaces with their aesthetic and psychological functions. This study examined women's tendency to use indoor ornamental plants and their psychological and environmental effects during the Covid-19 pandemic. We conducted the study with women, who spend the most time at home. It showed that women not only considered ornamental plants as a decorative element but also as a tool that increases their psychological well-being and improves the atmosphere of the space. This reveals that in the context of changing spatial needs after Covid-19, plants play a stress-reducing and psychologically supportive role for individuals beyond being just a visual element. However, some women stated that ornamental plants take up unnecessary space or that their maintenance processes are laborious. These differences emphasized that individual attitudes towards ornamental plants vary and that spatial designs should be flexible according to the needs of users. As a result, the pandemic process had caused people to re-evaluate their living spaces and brought the psychological and environmental benefits of indoor ornamental plants to the forefront. It emphasized the importance of interior and landscape design within the framework of changing spatial needs and drew attention to the necessity of design approaches that support human psychology. This means that using a design approach that incorporates nature into future interior arrangements will help create long-lasting space solutions that will improve people's physical, mental, and social health.

Keywords: landscape design, spatial perception, sustainability.

INTRODUCTION

The Covid-19 pandemic was first detected on November 17, 2019, in Wuhan, Hubei province, China. At the beginning of the pandemic, individuals did not anticipate drastic changes in their living conditions. However, due to the fact that the transmission rate of the virus is 2.5 times higher than other epidemics and the serious health problems it causes, the World Health Organization declared Covid-19 as a global pandemic on March 11, 2020. This

pandemic has led to changes in many areas, such as education, the economy, consumption habits, and social life, starting from the health sector. Many countries have made mask use mandatory and imposed restrictions on social areas. The pandemic caused individuals to spend time in isolated environments and affected consumption habits. The Covid-19 pandemic has necessitated addressing research topics from different perspectives. However, there are no studies on the ornamental plants sector as of 2020. When looking at multidisciplinary studies on Covid-19, Çölgeçen and Çölgeçen (2020) looked into how anxious people were in Turkey because of the pandemic, and Bilge and Bilge (2020) looked into how the coronavirus outbreak and social isolation affected psychological symptoms in terms of psychological resilience and ways to deal with stress. Researchers determined that dysfunctional stress coping methods negatively affected psychological symptoms, while psychological resilience served as a protective factor. Karadağ and Yücel (2020) evaluated the transition of universities in Turkey to distance education as of March 16, 2020, during the Covid-19 process and the satisfaction of undergraduate students towards this process. Korkmaz and Başaran (2021) determined the changes in coffee consumption habits among coffee lovers during the COVID-19 pandemic. As a result of the research, it was determined that the participants experienced significant increases in the amount of coffee consumption during the pandemic and encountered some problems related to coffee consumption in home conditions. The normalization process, which began on June 1, concluded that they exercised great caution when consuming coffee outside. In the study, it was determined that during the normalization period that started on June 1, participants mostly consumed "filter coffee, Turkish coffee, and cold brew coffee" at home. Koşaroğlu et al. (2020) reported in their study that the Covid-19 pandemic process had an impact in many areas. In the study, they concluded that consumers aim to carry out shopping and payment activities in a way that will not be infected during the pandemic. Kasapoğlu (2020), Bozdağ (2020), and Cullen et al. (2020) examined the effects of the Covid-19 pandemic process on human psychology. They think that the psychological reactions of individuals during the pandemic can significantly affect the spread of the disease and the emotional distress and social dysfunctions that may develop after the pandemic. According to Wang et al. (2020), in a study conducted in China, the pandemic causes moderate to severe psychological effects in people. Psychological problems such as depression, anxiety, and stress occur in individuals due to the pandemic. Li et al. (2020a) and Li et al. (2020b) found that the Covid-19 pandemic decreased positive emotions and increased negative emotions. They also reported that people may experience anxiety and tension due to the stressful nature of the pandemic. Stress situations need to be managed effectively to prevent anxiety and tension from turning into more severe irritability and panic. Studies conducted during the Covid-19 pandemic period are important not only to reveal the current situation analysis but also to inform future generations about the situation experienced, the measures taken, and to provide significant benefit to the academic study base. As seen from multidisciplinary studies, the negative effects of the pandemic on humans during the Covid-19 pandemic period attracted attention. Before the Covid period, there were studies emphasizing the positive effect of ornamental plants on humans. It is aimed to evaluate and relate whether this positive effect exists during the Covid period from a different perspective. There have been studies on the environmental and psychological effects of ornamental plants in recent years.

Van den Berg and Custers (2011) tested the stress-reducing effect of gardening in a field experiment. The study randomly divided thirty gardeners who underwent a stressful task (Stroop test) into two groups. One group gardened outdoors while the other group read books indoors. They found that green spaces and ornamental plants make positive psychological contributions to human life. These findings reveal that interaction with nature is an important factor in stress management and that green spaces support individuals' mental health. The studies provide a scientific basis for emphasizing the positive effects of ornamental plants and natural environments on human psychology. Park and Mattson (2008) reported that there were no clinical trials on the benefits of indoor plants for stress reduction and the recovery of surgical patients in a hospital setting. In their study, using various medical and psychological measures, they evaluated whether plants in hospital rooms have therapeutic effects. In conclusion, they confirmed the therapeutic value of plants in the hospital environment as a noninvasive, inexpensive, and effective complementary medicine for surgical patients. They also reported that healthcare professionals and hospital administrators should consider the use of plants and flowers to make healing environments more effective for patients. In their study, Urrestarazu et al. (2021) evaluated the role of having plants at home during the quarantine period due to the Covid-19 pandemic, which deprived people of freely visiting open green spaces. They reported that living walls were considered an advantage for increasing indoor vegetation cover. Spano et al. (2021) stated that public green spaces are associated with human psychology, but when they are inaccessible, the impact of green elements in and around the home remains limited. They conducted an online survey in their study to investigate the impact of indoor and outdoor green features on psychological health during the Covid-19 lockdown. They evaluated the effects of indoor ornamental plants, sunlight, and landscape on anxiety, anger, fear, irritability, distraction, and sleep disorders. According to the results, having potted plants at home and getting more sunlight had

positive psychological effects. Deng and Deng (2018) drew attention to the potential of indoor ornamental plants to improve indoor air quality, emphasizing the positive effects of being in touch with nature on human health and comfort. Considering that people spend most of their time indoors, indoor plants are effective in reducing air pollution, and extensive research has been conducted on this subject. In addition, indoor plants have positive effects on perception, solar energy utilization, acoustic regulation, and general health. Han and Ruan (2019) defined and reviewed the perceptions (emotion, cognition, health, restoration, thermal comfort, productivity, and satisfaction) reported by people about indoor ornamental plants. From the reviewed studies, they concluded that the most salient effects of indoor plants on people are increasing positive emotions, decreasing negative emotions, and reducing physical discomfort. As can be understood from the studies, indoor ornamental plants are biotic materials that create a positive atmosphere in indoor and semi-indoor areas with their aesthetic and functional features. Although they are known to have positive psychological and physiological effects on individuals, studies on the effects of indoor ornamental plants on humans are limited in the literature.

This study aims to determine how the increase in the time individuals spend at home during the Covid-19 pandemic affects their interest in indoor ornamental plants and their purchasing tendencies. Additionally, we evaluated the impact of the pandemic on cultural care habits and consumption behaviors for ornamental plants. The study emphasizes the importance of indoor ornamental plants in terms of human health and environmental sustainability and aims to provide a scientific basis for future research. Furthermore, we anticipate that this study will make a distinctive contribution and provide guidance to multidisciplinary research. The reason why only women were selected is that women carry out their work at home; women with young children and women who do not work in any job are more likely to be in the home environment. The aim of this study is to determine the effect of the Covid-19 pandemic on women's use of indoor ornamental plants, the importance they attach to these plants, the cultural care processes they apply, their purchasing tendencies, and their spending orientations. In addition, it is aimed to emphasize the positive effects of indoor ornamental plants on people and to consider these plants from a holistic perspective in terms of environment and health. Within the scope of changing consumer behavior during the pandemic process, it is important to understand trends toward indoor ornamental plants. We conducted a survey study among women who have a preference for ornamental plants. The study aims to create a scientific basis for future research by emphasizing the psychological, social, and environmental benefits of indoor ornamental plants. It is envisaged that the data obtained will contribute to strategic planning for the indoor ornamental plants sector during and after the pandemic process.

MATERIAL AND METHOD

Material: Yozgat province is located in the Central Anatolia Region of Turkey, within the Middle East of Kızılırmak area, on the Bozok Plateau. The area lies between the meridians of 34°05' and 36°10' east and the parallels of 38°40' and 40°18' north. The Central District served as the study's site. In terms of methodology, the study's primary population consisted of female individuals over the age of 18, who use social media and reside in Yozgat province. In cases where it is difficult or impossible to determine the boundaries of the main mass or the framework of the sample, the nonprobability sampling method becomes inevitable (Nakip, 2013). For this reason, the convenience sampling method comes into play. A subgroup of the nonprobability sampling method was used in this research. If the number of people in the target group is not known, the formula applied in determining the size of the sample mass is as follows (Yazıcıoğlu & Erdoğan, 2014; Tulum, 2019; Türkoğlu, 2020): The formula for determining the size of the sample mass is $n = t^2.p.q/d^2$, where n represents the sample volume. or the number of individuals to sample, and p is the probability of occurrence. The frequency of occurrence of the event under investigation, i.e., the probability of occurrence-q: The frequency of non-occurrence, that is, the probability of non-occurrence, is at a certain level of significance, the value found in the t-table: We accept a +/- sampling error based on the event's frequency of occurrence. The target group is the social media users, and the number of people is unknown. The preferred confidence interval is 95%; the sampling error is 0.05, and the t-value is 1.96. The sample size of the event examined is 'n,' the probability of occurrence and non-occurrence 'p' and 'q' values are equal and 0.50. In this case, based on the formula, n=1.962x0.50x0.50/0.052=384 people constitute the targeted sample group of the research. The survey assessed 386 individuals, of whom 388 actively participated in the study. The interviews commenced on January 14, 2021, and concluded on March 20, 2021.

RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of the women who participated in the survey in the Yozgat Central District. Below, we interpret the findings in detail. The survey reveals that married women make up the majority of the participants. (58.96%). The rate of single individuals is 41.04%. This indicates that the study area has a high marriage rate and maintains a traditional family structure. Upon analyzing the age distribution of the participants, the largest group comprises individuals between the ages of 26 and 35, accounting for 37.14%. The 18-to-25 age group follows with 30.13%. These results underpin that individuals in the young and middle-aged groups participate more in the research. The majority of the participants (30.39%) hold bachelor's degrees in terms of education level. The rate of high school graduates is 23.64%, and the rate of primary school graduates is 22.86%. The proportion of individuals with associate's and graduate degrees is 14.03% and 9.09%, respectively. These results indicate that women typically have medium to high levels of education. The majority of women (70.39%) do not have a job. The rate of employed individuals is 29.61%. (Table 1). This may indicate that women's employment is low and domestic roles are still prevalent. When the income level of the women who participated in the survey is analyzed, it is determined that 65.71% of them do not have any income. The rate for those with an income between 0 and 17.002 TL is 9.87%. The percentage of individuals in the 17.003-25.503 TL income group is 4.68%, whereas the percentage of individuals in the 34.005-42.505 TL income range is 3.38%. The rate of individuals with an income of 42.506 TL and above is 12.87%. These data demonstrate that the majority of women have limited economic independence and are in the low-income category. Table 2 illustrates our analysis and interpretation of the pandemic process's effects on individuals, taking into account both the lowest and highest values. We analyzed the participants' experiences related to the pandemic, news sources, home time, and psychological effects. While 81.82% of the participants stated that they had not been diagnosed with COVID-19, 82.60% stated that there were individuals diagnosed with it in their close circle.

Table 1. Demographic characteristics of the women surveyed in Yozgat Central District.

Categories	**Frequency**	**Percentage (%)**
Marital status		
Married	227	58.96
Single	158	41.04
Age	Frequency	Percentage (%)
26-35	143	37.14
18-25	116	30.13
36-45	64	16.62
46 ve üzeri	62	16.10
Level of Education	Frequency	Percentage (%)
License	117	30.39
High School	91	23.64
Primary education	88	22.86
Associate Degree	54	14.03
Postgraduate	35	9.09
Employment Status	Frequency	Percentage (%)
Not working	271	70.39
Working	114	29.61
Income status (TL: Turkish lira) Current rates according to minimum wage	Frequency	Percentage (%)
No income	253	65.71
0 – 22.000 TL	38	9.87
22.001 – 42.000 TL	18	4.68
42.001-62.000 TL	14	3.64
62.001 -82.000 TL	13	3.38
82.0001 TL and above	49	12.87

This finding indicates that individuals are likely to come into contact with the virus even if they are not directly infected. The most preferred news source during the pandemic is social platforms (32.7%), while the least preferred

source is newspapers. (1.7%). This shows that digital media plays an important role in obtaining information, while traditional media has lost its influence. While the majority of individuals (35.58%) spent 10–14 hours a day at home before the pandemic, it is evident that this time has increased significantly after the pandemic. A 69.35% The participants state that they stay at home for more than 19 hours. This process isolates individuals from their social lives and results in psychological effects. While 32.47% of the participants claim that they experience moderate boredom, 10.13% underline that they are never bored. This reveals that individuals struggle with the feeling of loneliness and monotony during the pandemic (Table 2).

Table 2. Women's responses to the questions about the pandemic process in Yozgat.

Categories	Frequency	Percentage (%)
Have you been diagnosed with Covid-19 during the pandemic?		
No	315	81.82
Yes	70	18.18
Has anyone in your close circle been diagnosed with Covid-19?		
Yes	318	82.60
No	67	17.40
How do you follow the news and information about the Covid-19 pandemic process? (Please select up to 3 options)		
TV		27.8
Social platform		32.7
Life Fits Home Program		11.3
Official website of the Ministry of Health		8.4
Internet resources		18.1
Other (Newspaper)		1.7
Total		100.0
How did staying at home during the pandemic affect you?		
Negatively affected	151	39.22
It had a little negative impact	141	36.62
Did not affect	46	11.95
Slightly positive impact	29	7.53
Positive impact	18	4.68
On average, how many hours did you spend at home before the pandemic?		
19 and more hours	71	18.44
14-18 hours	66	17.14
10-14 hours	137	35.58
5-9 hours	87	22.60
1-4 hours	24	6.23
On average, how many hours do you spend at home after the pandemic?		
19 and more hours	267	69.35
14-18 hours	41	10.65
10-14 hours	41	10.65
5-9 hours	32	8.31
1-4 hours	4	1.04
How bored are you when you stay at home during the pandemic?		
Middle	125	32.47
A little bit	85	22.08
Too much	72	18.70
More	64	16.62
Nothing	39	10.13

In terms of aesthetics and decorative values, "The potted plants I grow at home make the environment look decorative and add vitality" (mean=4.305) and "The potted plants I grow at home make my home look decorative" (mean=4.312) are among the statements with the highest level of agreement. This shows that individuals see indoor ornamental plants not only as an element of nature but also as a decorative element that beautifies their living spaces. When it comes to psychological effects, the data on individuals' relationships with ornamental plants during the pandemic reveal that these plants have a positive effect on their psychological well-being (Table 3). Additionally, the data on individuals' relationships with ornamental plants during the pandemic also reveal that these plants have a positive effect on psychological well-being. There is a high level of agreement with the statements "The potted plants I grow at home during the pandemic give me morale" (mean = 3.992) and "Especially the potted plants grown during the pandemic give me more joy in living" (mean = 3.869). These findings outline that

connecting with nature during the pandemic process supports individuals' emotional well-being. On the other hand, from a plant perspective, it is evident that less favorable statements about ornamental plants are also noteworthy. The statements "Potted plants grown at home take up unnecessary space" (mean = 2.184) and "I grow potted plants at home, but it is boring to take care of them" (mean = 2.816) represent the fact that individuals are more distant from ornamental plants. As a result, individuals' orientation toward ornamental plants develops during the pandemic process, and these plants have an important place in psychological and aesthetic terms. However, some individuals found the maintenance processes to be laborious.

Table 3. Level of agreement with statements about indoor ornamental plants during the pandemic (5-point Likert scale).

Expression	Mean	SD
It is important that the potted plants I grow at home bloom.	3.940	1.018
It is important that the potted plants I grow at home are evergreen.	4.212	0.874
The potted plants I grow at home satisfy my longing for nature.	3.952	1.005
It is important that the potted plants I grow at home are fragrant.	3.300	1.139
I grow potted plants at home, but caring for them is boring.	2.816	1.295
Home-grown potted plants take up unnecessary space.	2.184	1.233
The potted plants I grow at home have a positive effect on my psychology.	4.199	0.981
It is important that the potted plants I grow at home are tall.	2.771	1.256
I change the pots of the potted plants I grow at home every year.	3.134	1.198
The potted plants I grow at home decorate and enliven the environment.	4.305	0.853
The potted plants I grow at home make my home look decorative.	4.312	0.797
I choose potted plants according to my budget.	3.920	1.046
I often buy potted plants.	2.788	1.162
In the pandemic, I have more time to care for my potted plants.	3.496	1.118
During the pandemic, the potted plants I grow at home cheer me up.	3.992	0.960
Especially potted plants grown during the pandemic give more joy of life.	3.869	0.999
When my potted plants dry up in the pandemic, I feel more sad than before.	3.544	1.217
When my flowers dry up, I buy new ones.	3.615	1.139

CONCLUSIONS

Rapid population growth and construction directly contribute to urbanization. While urbanization is an essential aspect of modern life, the loss of natural areas can lead to environmental and psychological issues. At this point, the role of plants in urban life is becoming increasingly important (Gülgün et al., 2015; Gülgün et al., 2014; Ankaya et al., 2017). Urban green areas increase air quality, filter harmful gases, and provide temperature balance. Plants offer not only environmental but also psychological benefits. Research indicates that parks, gardens, and forested areas not only lower stress levels but also have a positive impact on individuals' mental health. Simultaneously, the presence of plants in urban areas fosters social interaction and creates tranquil spaces where people congregate to spend quality time. Therefore, giving more space to plants in sustainable urbanization policies is a critical step in terms of improving the quality of life (Yazici & Aşur, 2021; Yazici & Temizel, 2020; Yazici & Gülgün, 2019; öztürk Birim & Ankaya, 2020). As a result, the pandemic process has caused individuals to re-evaluate their living spaces, and indoor ornamental plants have become an important psychological and aesthetic component. This study emphasizes the importance of interior and landscape design within the framework of changing spatial needs after Covid-19 and draws attention to the necessity of design approaches that support human psychology. Following a nature-integrated design approach when planning future interior arrangements will help create long-lasting space solutions that are beneficial for people's physical, mental, and social health. The study also reveals that people perceive ornamental plants as decorative elements that enhance the spatial atmosphere and psychological well-being. Women who spent more time at home during the pandemic saw ornamental plants as a stress-reducing tool and a way to connect with nature. The hierarchical cluster analysis of the responses to Marital Status and Dealing with Potted Plants I Grow at Home Is Boring is given in Figure 1. This method aims to create more balanced groups by minimizing the difference between the clusters. Figure 2 shows the distribution of marital status and the response to "The potted plants I grow at home make my house look decorative." The distance between branches in the dendrogram indicates the similarity level of the clusters.

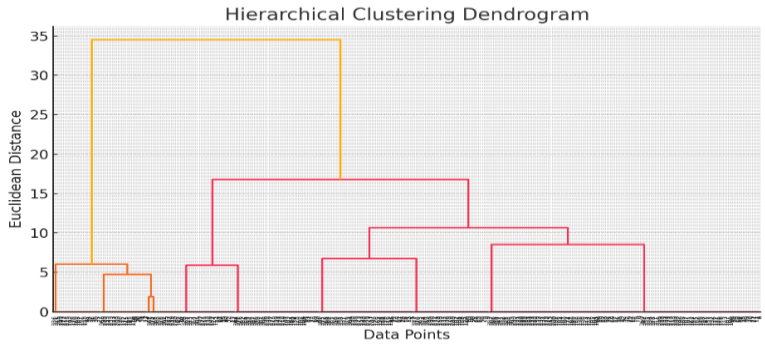

Figure 1. Distribution of responses to "It is boring to deal with potted plants that I grow at home" by marital status.

Additionally, branches cut from a higher angle demonstrate clusters that are more different from each other. What is more, the clustering hierarchy reveals that the marital status variable effectively divides individuals into distinct subgroups. Therefore, it can be expected that different marital status categories can be gathered in certain groups because married, single, or other marital statuses are important demographic factors that affect people's general attitudes and behaviors.

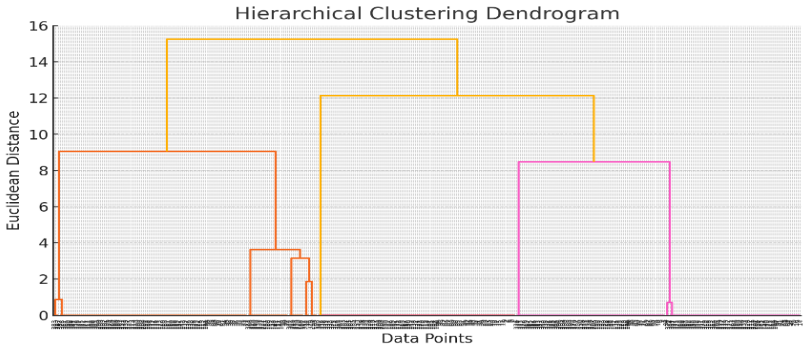

Figure 2. Distribution of the answer to "The potted plants I grow at home make my house look decorative" by marital status.

On the other hand, some of the participants state that they find the maintenance processes of ornamental plants challenging and therefore have reservations about their spatial use. The laboriousness of the maintenance process posed a challenge, especially for actively working individuals. However, we observe that the interest in ornamental plants varies depending on personal lifestyle, education level, and social habits. As a result, the Covid-19 pandemic process causes individuals to re-evaluate their living spaces, and ornamental plants become an important component in terms of psychological, aesthetic, and environmental sustainability. By using a design approach that incorporates nature into future interior arrangements, we can create long-lasting space solutions that improve people's physical, mental, and social health.

Description.The author received the Ethics Committee's permission for the study from the Social and Human Sciences Ethics Committee of Yozgat Bozok University.

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