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Ornamental Flowers Induce Psychological Well-Being of University Public

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ABSTRACT

Ornamental plants provide several advantages to individuals, including emotional and mental wellbeing, physiological health, social relationships, and economic and financial circumstances. The correlation between flowers and aesthetically pleasing plants has been widely acknowledged as having a favorable influence on psychological wellbeing throughout the history of humanity. This study investigates the role of ornamental flowers in the psychological wellbeing of students and staff. This descriptive study used a quantitative approach. The study sample was 350 (male =212, female=138), including students and employees at the University of Okara. The study revealed that Ornamental flowers in universities are linked to significantly reduced stress levels and enhanced mood in the university community. The benefits of this beautiful campus environment with ornamental flowers are a reduction in stress levels, improved mood, and a peaceful aesthetic appreciation for residents. More psychological wellbeing and economic benefits were discovered with the presence of flowers in males compared to females. Staff well-being, meanwhile, was perceived as higher than for students impeding the perception that ornamental plants may be generally more beneficial to professional roles within a setting. Their findings indicate that we need to integrate natural elements in our environments, specifically at the university level, to create an enriched learning experience and environment perfect for creating general wellbeing. Such research also can shed light on the value of ornamental plants and their ability to generate a sense of wellbeing and encouragement in campus ambience.

INTRODUCTION

Plants, which serve as fundamental components of the natural world, have significant importance in the context of human existence, particularly in the intricate interplay between humans and nature. Flowers are seen as enchanting manifestations of the natural world, with some asserting that they represent the pinnacle of nature's offerings to humanity. The experience of seeing aesthetically pleasing and vibrant flowers can evoke positive emotions such as pleasure, tranquility, and happiness inside an individual. Ornamental flowers are proven to have a massive impact on mental health, especially in areas where people get stressed. According to Wisneski (2022), university buildings should have a few visually soothing elements from nature, including ornamental flowers, especially in areas where students experience academic-related stress. These natural ingredients are associated with better emotional and stress conditions.

Scientists have proven that seeing natural foliage, including flowers, has been associated with a decrease

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in stress-related physiological markers like blood pressure (Mochizuki et al., 2022). In studies using natural environments to show improvement in mental recovery and concentration, there is proof of shorter hospitalization times and less analgesic use among post-surgery patients with access to natural views (Ulrich, 1984). elements from nature, such as plants, can improve concentration and reduce mental fatigue for dormitory residents (Tennessen & Cimprich, 1995). Flowers or natural scenes can create a calming effect in public spaces at universities and increase overall productivity and well-being (Kim & Mattson, 2002). Our sense of smell is intricately connected to memory, unlike any other purpose save for sight. The olfactory experience of flower smells may have effects beyond just emotional satisfaction. Various methods exist in which they may influence our souls, brains, and bodies. Throughout millennia, ornamental plants have served several purposes. The significance of decorative plants, including green spaces, has seen a steady increase in conjunction with the fast process of urbanization witnessed globally in recent years (Puplampu et al., 2021).

University students spend significant time in and around the campus environment (Horne, 2000). During this time, students must focus on activities such as studying for exams and completing assignments, which can deplete their directed attention resources and contribute to mental fatigue or heightened stress levels. Students' common stressors include academic pressures, meeting expectations, financial challenges, and lack of time (Hurst et al., 2013; Robotham, 2008). Stress and other psychological issues are also prevalent among university students (Macaskill, 2013; Storrie et al., 2010). For example, a study in the United Kingdom reported an 11% increase in self-reported psychological symptoms among students from their first to their second academic year, with higher levels of anxiety and depression in the second year compared to the first. Although these levels slightly decreased in the third year, they remained elevated (Macaskill, 2013). In the Netherlands, approximately 12% of individuals aged 18-25 years and 22% of university students report psychological problems (Driessen, 2011; Schmidt & Simons, 2013). The study aims to investigate the relationship between the presence of ornamental plants and stress reduction, mood enhancement, or emotional well-being for the university public.

LITERATURE OF REVIEW

Siu (2016) explained the natural scenes compensate for mental fatigue and relaxation through a refreshing experience. ornamental flowers are seen as a lesser but substantial form of nature exposure (Zhao & Tao, 2015). According to Lau, Gou & Liu (2014) natural flowers can decrease stress and uplift spirits in urbanized atmospheres. They are also pertinent in environments where students lack access to nature, meaning flowers can be a proxy for broader nature exposure. Ikei et al. (2014) explained that psychological effects of ornamental flowers have reported a positive correlation between exposure to flowers and the enhancement of mood. The influence of large-scale natural scenes on human physiological and emotional responses has been documented; blood pressure was significantly lower among patients who visited a botanical garden, and self-reported positive states were associated with stress reduction (Owen, 2002). Patients recovering from gall bladder surgery were hospitalized for fewer days, received better nurse evaluations, and requested fewer narcotic painkillers if their rooms faced greenspace as opposed to the other wall (Ulrich, 1984). Tennessen and Cimprich (1995) also found that university dormitory residents with natural views demonstrated improved concentration.

Plant life and more compact outdoor spaces have a smaller but still important effect. Evidence for a mechanistic effect of nature on individuals includes data that showed improved vocalization rates, food consumption, total time spent, and use of tables when dining room cut flowers were present in psychiatric hospitals (Talbott et al., 1976). Adults with mental retardation employed at a greenhouse also showed less stress, as indicated by the lower electrodermal response, blood pressure, and heart rate compared to those in an on-site training facility (Doxon et al. Similarly, foliage plants decreased stress and increased positive responses among university students (Coleman & Mattson, 1995). One study found similar results among university students when interior plants were added to a windowless computer lab; productivity increased while stress and attentiveness decreased because of their presence (Lohr et al., 1996). In addition, female students under emotional stress who were exposed to the sight of red-flowering geraniums had a quicker decrease in beta brainwave and electrodermal activities, reported better mood states, and increased attentional performance (& Mattson, 2002).

Due to the olfactory bulbs' direct connection to the limbic system in the brain, the olfactory senses are responsible for controlling emotion, mood, memory, and behavior (Engen, 1982; Laing et al. Fragrant molecules can enter the blood flow through the lungs when inhaled and interact with human biochemistry or directly stimulate the limbic system via olfactory bulbs and thus influence one's own perception, behavior, and emotions (Serby & Chobor, 1992). Plants emit volatile chemical substances triggering the very same receptors that identify an odor in a human or animal; animals and people are attracted to flowers, and scents have significant biological effects, which are of paramount importance as regards more complexes, for example, antiviral, bactericidal and sedative action (Damian & Damian, 1995). Multiple studies suggest the benefit of scents produced by flowers and, in some cases, artificial fragrances. One such case was the effects of 'Jungle Gardenia' (Baron, 1981), which increases interpersonal attraction and positive social perception among male university students. Exposure to a pleasant almond odor increased memories of happiness in female college students (Ehrlichman & Halpern, 1988), and cancer patients awaiting diagnostic procedures experienced decreased anxiety when exposed to a sweet heliotropin fragrance (Redd et al.). Those with dementia who inhaled lavender fragrance at night had increased sleep (Henry et al., 1994). Farris et al. (2024) conducted a study in various settings with flowers that elicited immediate increases in positive emotions and reductions in negative moods. Reduced negativity in the problems Decreased degrees of stress Quicker postural muscle task Due to this link on the scent-somatic situation

Yildirim et al. (2024) found that employees' cognitive performance and focusing were most sharply contrasted in office settings containing flowers and ornamental plants,

improving both environmental enrichment in environments with flowers and transitioning time spent within them. This work is confined to office environments, its results are relevant for university settings; enhancing cognitive function by the impact of diverse modifiable environmental conditions may enable better academic outcomes in certain students.

Ulrich's Stress Recovery Theory (SRT) and Kaplan and Kaplan's Attention Restoration Theory (ART) are the main theories guiding the literature on environmental preference and restoration. SRT suggests that interactions with environments trigger an immediate and unconscious emotional response that influences behaviors, supporting well-being and survival. For instance, encountering a threatening situation, like seeing a bear during a nature walk, elicits an affective response such as fear, motivating avoidance behavior. In less dangerous situations, emotional responses to natural settings, especially green spaces, can still induce positive adaptive responses, even if these do not result in immediate actions. The emotional benefits of interacting with unthreatening green environments are evident in physical and psychological improvements, particularly in reducing stress and promoting relaxation by blocking negative thoughts (Ulrich, 1983; Ulrich et al., 1991). This positive effect helps manage stress in some individuals while keeping emotional balance optimal in others.

According to SRT, environments with moderate complexity, clear focal points, depth, smooth surfaces, curved lines of sight, and a sense of safety are more likely to evoke positive affective responses (Ulrich, 1986). On the other hand, ART posits that mental fatigue can be alleviated in green environments. Directed attention, essential for focusing on complex tasks, becomes fatigued with extended use, leading to errors, irritability, and other signs of mental exhaustion. By engaging involuntarily and effortlessly, nature allows directed attention to rest and recover. Nature's components, such as its ability to create a sense of escape, the soft fascination of its dynamic elements (e.g., the movement of leaves), the immersive feeling of being in another world, and the compatibility of natural spaces with individual needs, all contribute to this restorative experience (Kaplan, 1995; Kaplan & Kaplan, 1989).

Both SRT and ART describe environmental preference as an immediate positive affective response closely tied to restoration. How well an environment aligns with people's needs shapes this response. As a result, environments that meet these needs are more likely to be preferred. Preferences are not solely based on aesthetic appeal; they also involve an immediate pleasurable sensation and a physiological reaction that can motivate either avoidance or a desire to visit the environment (Ulrich, 1986; White et al., 2010). In the context of university campuses, ornamental flowers contribute significantly to psychological well-being by creating visually attractive and restorative spaces that can promote emotional recovery and relaxation among students and faculty

The impact of stress and psychological issues on students is concerning, as it can negatively affect their academic performance and have long-term consequences on their physical and mental health (Suhrcke & Da Paz Nieves, 2011; Arsenio & Loria, 2014; Kessler et al., 2007). Evidence suggests that exposure to greenery within university environments could benefit students' psychological well-being. Several literature reviews highlight the positive effects of greenery in indoor and outdoor environments, noting its role in reducing stress (Bringslimark et al., 2009; Hartig et al., 2014; McSweeney et al., 2015), improving emotional states (e.g., increasing happiness and reducing anxiety) (Bowler et al., 2010; Lachowycz & Jones, 2013), and enhancing cognitive function (Hartig et al., 2014; Van den Berg et al., 2015).

Despite the recognized importance of greenery, few studies have explored its effects specifically within university settings. One study conducted at a university in the United Kingdom found a positive correlation between the use of campus greenery and students' perceived quality of life (McFarland et al., 2008). Other studies have shown that indoor plants or nature views in university classrooms can improve students' evaluations of their courses and instructors and their academic performance (Seitz et al., 2014). Although it is reasonable to expect that students would benefit from greenery in the university environment, it remains unclear whether students prefer green spaces and perceive them as having restorative benefits. Investigating students' preferences and perceptions regarding green university environments could offer insights into the potential need for incorporating more greenery on campuses, as Stress Recovery Theory (SRT) and Attention Restoration Theory (ART) suggested.

According to a literature review by Stamps (1999), there is a high degree of consensus in environmental preferences across various demographic subgroups. This review suggested minimal preference differences based on gender, ethnicity, or political affiliation. However, subsequent studies on preferences for gardens, wilderness, and other natural environments have reported variations by gender, age, income, education level, and profession (Sklenicka & Molnarova, 2010; Van den Berg & Van Winsum-Westra, 2010; Berto, 2007; Van den Berg & Koole, 2006; Kirkpatrick, Daniels, & Zagorski, 2007; Regan & Horn, 2005). Additionally, individuals with a stronger connection to nature, nature-related hobbies, a preference for nature holidays, or positive childhood experiences with nature have shown a greater likelihood of preferring natural environments and higher perceived restoration potential in green spaces (Regan & Horn, 2005; Korpela, Ylen, Tyrväinen, & Silvennoinen, 2008). While these studies suggest differences in environmental preferences among certain subgroups, the literature remains inconsistent, particularly regarding whether these differences apply to university students (Naz & Epps, 2004).

METHODS

This research used quantitative approaches to examine the potential effect of ornamental flowers on the psychological well-being of the university community. The research population comprised 350 individuals (male =212, female=138), including students and employees at the University of Okara. We used simple random sampling technique to choose and approach the participants. Our objective was to guarantee that the individuals chosen for our study were a varied representation of the university community, increasing our results' generalizability. The

surveys used recognized instruments to evaluate the psychological well-being of participants, such as their mood and happiness with life. These assessments were conducted before and after the individuals were exposed to the ornamental flowers of the institution.

RESULTS & ANALYSIS

Table 1

Percentage and frequency distribution of respondents

Variable	Frequency	Percentage
	Gender	
Male	212	60.5%
Female	138	39.4%
Living Area		
Rural	223	63.7%
Urban	127	36.2%
Education		
Middle	35	0.1%
Matric	40	1.1%
Under- Graduation	162	0.4%
Graduation	95	27.1%
Above Graduation	58	16.5%

Table 1 showed the Demographic characteristics of the study sample (males 60.5%, females 39.4%). Most participants were from rural living areas (63.7%), with the urban population making up 36.2%, indicating a selection bias towards representing perceptions significantly more from rural backgrounds than. The educational levels of the respondents were identified as undergraduates: 46.3%, graduates 27.1%, and education above graduation: 16.5%. Few (0.1%) belonged to middle and matric levels. A high number of nodes in the center indicates different educational backgrounds.

Table 2

Participants' answers

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The presence of ornamental flowers on campus enhances my mood and emotional well-being	19 (5.4%)	35(10.0%)	75(21.4%)	190(54.8%)	31(8.8%)
The presence of ornamental flowers on the university campus improves my mood.	30(8.5%)	61(17.4%)	48(13.7%)	122(34.8%)	89(25.4%)
Ornamental flowers on campus have a calming effect on me.	25(7.1%)	34(9.7%)	90(25.7%)	150(42.8%)	51(14.5%)
I feel more connected to nature when I see ornamental flowers on campus.	30(8.5%)	31(8.8%)	38(10.8%)	154(44.0%)	97(27.7%)
The presence of ornamental flowers enhances my overall well-being.	61(17.4%)	63(18.0%)	15(4.2%)	192(54.8%)	19(5.4%)
I find ornamental flowers on campus to be aesthetically pleasing, which positively affects my mood.	14(4.0%)	14(4.0%)	69(19.7%)	223(63.7%)	30(8.5%)
Ornamental flowers make me feel more relaxed and less stressed.	37(10.5%)	14(4.0%)	54(15.4%)	184(52.5%)	61(17.4%)
Being around ornamental flowers on campus boosts my creativity.	31(8.8%)	55(15.7%)	48(13.7%)	189(54.0%)	27(7.7%)
Ornamental flowers contribute to a positive atmosphere on campus that enhances my well-being.	25(0.7%)	27(7.7%)	89(25.4%)	149(42.5%)	60(17.1%)
I feel happier and more satisfied when there are ornamental flowers in my university environment.	34(9.1%)	35(10.0%)	78(22.2%)	189(54.0%)	14(4.0%)
The presence of ornamental flowers on campus positively impacts my overall psychological well-being.	14(4.0%)	19(54.2%)	53(15.1%)	224(64.0%)	46(13.1%)

The data supplied illustrates the participants' answers to a set of statements about the existence of decorative flowers on their university campus and their potential effect on their emotional and psychological well-being.

Based on the responses received, it is apparent that a significant majority of the participants agreed or strongly agreed with the favorable influence of Ornamental flowers on several dimensions of their overall well-being. Notably, a considerable percentage of participants agreed with the excellent impact of decorative flowers on their emotional state, sense of connection to the natural environment, and the creation of a generally favorable ambiance within the campus setting. Additionally, most participants felt that adding flowers was a source of calm and ease for them, which improved their overall health and well-being and positively impacted their mental health. These findings suggest that ornamental flowers positively affect individuals' emotions and psychological well-being in a university community. "Our results highlight the importance of incorporating natural features in campus designs to benefit student, faculty, and staff well-being overall," the authors conclude.

Table 3

Mean difference of psychological well-being by interacting with ornamental flowers

Gender	N	Mean	SD	Std. Error Mean	t
Male	212	41.6604	3.77165	.25904	7.753*
Female	138	38.1014	4.77874	.40679	
Student	229	39.5633	5.20894	.34422	-4.019*
Staff	121	41.5702	2.38686	.21699	

*p<.001.

Psychological well-being means that difference analysis interacts with sex, and there is a significant gap between males and females when discussing ornamental flowers. Males (N = 212) had a higher mean psychological well-being score (M = 41.66, SD = 3.77) than females (N = 138), who had a lower mean score of M = 38.10, SD = 4.78. The standard error is 0.259 for males and 0.407 for females. T-test, t = 7.753, p <. 001), the difference between the two is statistically significant. Thus, the psychological well-being females' gain from interacting with ornamental flowers is markedly lower than what males derive. Similarly, staff has higher psychological wellbeing (M = 41.57, SD = 2.38) by interacting with ornamental flowers than students (M = 39.56, SD = 5.2, p<.001)

Discussion

The world will have about 50 per cent of its population in urban areas soon, and projections continue to grow as the trend to build gains more followers that also experience building development, which in turn encourages an increase in the number of apartments. Urban life boasts several characteristics– jam-packed traffic conditions, noise pollution, round-the-clock activity and predominantly artificial surroundings with hardly any natural elements. Apartment living, as opposed to those who live in single-family homes, have less backyard space and need access to green or scenic views from their surrounding natural environment; men and women living in apartments could feel closed in and alone, which could distress their psychological state. This can be increased anxiety, alarm despair, or a loss of sense of life satisfaction. However, it would be beneficial for the mental health of apartment dwellers to include green spaces and other natural elements.

The results from this study reveal the considerable impact of ornamental flowers on the mental health of university members. These results show a strong association between the presence of these aesthetically satisfying plants and positive mental health outcomes. This reported decrease in stress and increase in mood is consistent with a growing body of evidence that exposure to natural elements, including nature—like views from windows inside hospitals [4]—and decorative flowers can have a calming and mood-enhancing effect on humans. This is especially relevant in higher education, where university students and faculty members often face increased stressors for academic or career-related demands. Compared to how aesthetic considerations are expressed implicitly through the responses gathered on issues, the qualitative data shed additional light on the importance of aesthetics because respondents note that pretty flowers "add to" or make things "more beautiful" around campus; what the subjects perceive correlates with an improvement in their measured mental health markers, suggesting that the aesthetic appeal of ornamental blooms is also influential to a significant extent on their benefits.

Finally, current research emphasizes the need and possible role of ecotherapy or nature-based treatments in educational settings. This creates an opportunity for universities to consider landscape design and horticulture projects as an effective means of creating a more supportive environment that benefits students and staff with their mental health and educational achievements. Future research may examine specific design principles and long-term effects, increasing our understanding of how best to incorporate ornamental flowers into university spaces to maximize their therapeutic effects.

CONCLUSION

The study found that ornamental flowers significantly improve wellbeing in higher education, which varied depending on gender and role (staff/student). Moreover, compared to females, males derived greater economic gains and lower psychological wellbeing from ornamental flowers. Moreover, faculty and staff members reported feeling much more psychologically well-off than students because ornamental plants' calming effects and stress-relief properties might be more relevant for those in campus professional roles.

The data illustrates how ornamental flowers have positively impacted participants' moods and emotional wellbeing while adding to serene and aesthetically pleasing campus surroundings. This has also helped them create a natural connection. Almost all participants (98%) felt that the flowers reduced stress, just over 90% said they felt more creative, and three-quarters agreed that there was a culture of positivity on campus during the study. These results support using and including natural elements such as

ornamental plants in university spaces for student, faculty, and staff wellbeing, which contributes to a healthier environment that promotes academic success in students.

Conflict of Interests

The authors has declared that no competing interests exist.

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