

Frangipani Aromatherapy Usage and Anxiety Levels among Spa Visitors: An Observational Study at Padma Resort Ubud

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ABSTRACT

Introduction: Anxiety is a typical emotional response to daily pressures experienced across various age groups, from adolescents to adults. Over 14 million people in Indonesia, or 6% of the country's population, suffer from anxiety. Kaplan and Sadock suggest that individuals aged between 21 and 45 years are more likely to experience anxiety disorders. Frangipani flowers, abundant in Bali, possess relaxation effects that can alleviate stress, attributed to compounds such as triterpenoids, amyrrin, geraniol, citronellol, and linalool.

Method: The research design employed was cross-sectional. The study was conducted from March to November 2023. Subjects were selected using consecutive sampling techniques. The study included 40 female spa visitors aged 21-45 years. The Zung Self-Rating Anxiety Scale was used to measure anxiety levels.

Results: Based on Spearman Rho test results, a p-value of 0.000 with $p < 0.05$ was obtained, indicating a significant relationship between frangipani aromatherapy usage and anxiety levels. The findings revealed that among visitors who underwent treatment with frangipani aromatherapy, eight individuals (40%) experienced mild anxiety, six individuals (30%) experienced moderate stress, and four individuals (20%) experienced severe anxiety.

Conclusion: This study concludes that frangipani aromatherapy usage is associated with decreased anxiety levels among visitors at Padma Resort Ubud Spa, based on statistical data analysis showing $p < 0.05$.

Keywords: frangipani, anxiety, visitors, spa

INTRODUCTION

Anxiety is a common issue experienced by many individuals from adolescence to adulthood and is a normal response to stressful life situations. The German word "angst" and the Latin word "anxious" are the origins of the word anxiety, used to describe unpleasant consequences and physiological stimuli. The American Psychological Association (APA) defines anxiety as an emotional state caused by stress and characterized by tense thoughts, worries, and apprehension, along with physical symptoms such as rapid heartbeat, high blood pressure, cold sweats, and trembling hands. Because anxiety is often experienced by everyone regarding upcoming activities, this condition is considered standard in life and serves as a warning sign of potential risks. However, anxiety can be classified as an anxiety disorder if it occurs continuously, irrationally, and worsens over time.¹

According to Katz et al. (2013), 16–29% of individuals have experienced anxiety disorders at some point in their lives. Research conducted by Duckworth in the United States in the same year revealed that 18.1%, or about 42 million young adults in the country, suffer from anxiety disorders. Anxiety disorders are more prevalent in Uganda and Africa, compared to Asia, with frequencies ranging from 3.4% to 26.6%. Based on the Basic Health Research (Riskesdas) report of 2018, over 14 million people in Indonesia, or 6% of the country's population, suffer from emotional and mental health problems, including depression and anxiety. Based on examinations conducted between 2020-2022 by the Indonesian Association of Psychiatrists, an increase in psychological problems was found annually, with anxiety issues reported at 68.8% in 2020, 76.1% in 2021, and 75.8% in 2022.^{2,3}

Although anxiety can affect anyone, women are more likely to experience it compared to men. Biologically, men produce more androgen hormones compared to estrogen hormones, which can influence anxiety levels. Additionally, women are more emotionally sensitive, which is associated with a tendency to experience anxiety.⁴ men often exhibit higher mental resilience levels when facing different situations than women. In addition to gender, age also influences anxiety levels. Although anxiety disorders can affect individuals of any age, research by Kaplan and Sadock (1997) indicates that individuals aged between 21 and 45 years are more likely to suffer from such disorders. In 2013, Boky conducted a study on the depiction of anxiety levels in adult patients aged 18 - 40 years. The results showed that five patients (8.1%) experienced moderate anxiety, and four patients (29%) experienced mild anxiety. In the age group of 41 – 60 years, the dominant occurrence was only mild anxiety (6.5%), with no patients experiencing moderate anxiety.^{2,3}

Early treatment of anxiety is crucial to prevent more severe mental health issues. Both pharmacological and non-pharmacological approaches can be utilized to address this condition. Due to its calming effects, alternative methods such as massage and aromatherapy are good non-pharmacological options. Spas typically offer these services. The Latin phrase "Solus Per Aqua," meaning "health through water," is abbreviated as "SPA." Spas offers various therapies, including massage, aromatherapy, and hydrotherapy. Based on several studies, it is believed that the active compounds present in these therapies can provide calming or relaxing effects. When inhaled, aromatherapy can stimulate olfactory senses and regulate neuroreceptors in the immune system, thus reducing anxiety and stress.⁵

Bali is abundant with fragrant frangipani flowers known for their soothing effects and aiding in stress relief. This effect stems from the triterpenoid compounds in frangipani flowers, such as linalool, citronellol, geraniol, and amyryn. According to the National Association for Holistic Aromatherapy, aromatherapy is an art and science that uses plants' natural aroma to enhance physical, mental, and spiritual well-being. Aromatherapy integrates physiological, psychological, and spiritual processes in healing efforts. Aromatherapy can be administered in various ways, including adding a few drops of essential oil to a diffuser or applying it directly to the skin.⁶⁻⁹

Padma Resort Ubud, a five-star hotel in Payangan, Gianyar, Bali, offers various facilities such as infinity pools, a sauna, a fitness centre, a bamboo bridge, and renowned spa services. The spa at Padma Resort Ubud provides a range of treatments designed for health, relaxation, and tranquillity, utilizing unique stones and water for guest comfort. This spa is popular among visitors for its use of natural ingredients and skilled therapists. Some treatment options include Hot Stone Massage, Balinese Massage, Deep Tissue Massage, Warm Bamboo Massage, and Warm Frangipani Petal Oil Massage. This research aims to test the hypothesis that using frangipani flower aromatherapy at Padma Resort Ubud Spa can influence the anxiety levels of visitors.

METHOD

This study employed an analytical observational design with a cross-sectional approach to examine the relationship between the use of frangipani aromatherapy and the level of anxiety among SPA visitors at Padma Resort Ubud. The research was conducted at the SPA of Padma Resort Ubud, renowned for using natural ingredients and skilled therapists. Treatment options at this spa include Hot Stone Massage, Balinese Massage, Deep Tissue Massage, Warm Bamboo Massage, and Warm Frangipani Petal Oil Massage, conducted from March to November 2023.

The study sample consisted of 40 individuals selected through consecutive sampling from SPA visitors at Padma Resort Ubud. Of these, 20 samples received the Warm Frangipani Petal Oil Massage treatment, while 20 received different treatments. All samples were women aged between 21 and 45 years, not menstruating and had completed the Zung Self-Rating Anxiety Scale questionnaire to assess their anxiety levels. The Zung Self-Rating Anxiety Scale questionnaire, designed by William WK Zung, was used, with validity test results for each questionnaire item ranging from 0.663 to 0.918.

The research variables included using frangipani aromatherapy as the independent variable, anxiety level as the dependent variable, and gender (female, not menstruating) and age range of 21-45 years as control variables. Data analysis was conducted using univariate and bivariate analyses employing the non-parametric Spearman-Rho test through software. The Spearman-Rho method was chosen because both variables under investigation had ordinal measurement scales. No data loss or other issues occurred during the research process as the data were securely stored physically and digitally. This study underwent review and obtained ethical approval from the Ethics Commission of Udayana University with approval number 670/UN14.2.2.VII.14/LT/2023.

RESULTS

The flow of this study began by determining the target population, which consisted of spas that use and provide frangipani aromatherapy, with Padma Resort Ubud Spa already incorporating frangipani aromatherapy into its services. Subsequently, the study subjects were identified by adhering to predefined inclusion and exclusion criteria. The inclusion criteria for this study were undergoing treatment at Padma Resort Ubud Spa, being willing to participate in the survey, completing an informed consent form as approval to become research subjects, being female, and being aged 21-45 years. The exclusion criteria included subjects not completing the questionnaire, subjects with a history of other diseases, and subjects menstruating. Once suitable subjects were identified, informed consent was obtained, and subjects underwent treatment at the spa. After completing the treatment, subjects were asked to fill out the Zung Self-Rating Anxiety Scale questionnaire, assisted by the research team and spa staff. After data collection, data was analysed by categorising the data into two groups: 20 respondents who received frangipani aromatherapy treatment and 20 individuals who received different treatments, as specified during the informed consent process. After data analysis, results were obtained and compiled into a report. The demographic characteristics of the respondents can be seen in Table 1.

Table 1. Demographic Characteristics of Respondents (n=40)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	40	100
Age	17-25 years	5	12.5
	26-35 years	22	55
	36-45 years	13	32.5
Level of Anxiety	Normal	5	12.5
	Mild	12	30
	Moderate	15	37.5
	Severe	8	20

Based on the demographic analysis of respondents in Table 1, the level of anxiety among visitors using frangipani aromatherapy varies. 40% (8 respondents) experience mild anxiety, 10% (2 respondents) fall into the standard category, 30% (6 respondents) experience moderate anxiety, and 20% (4 respondents) experience severe anxiety. For comparison, for other types of aromatherapy, 20% (4 respondents) experience mild anxiety, 15% (3 respondents) fall into the standard category, 45% (9 respondents) experience moderate anxiety, and 20% (4 respondents) experience severe anxiety. The Frequency Distribution of Respondents' Demographic Characteristics (n=40) can be seen in Table 2.

Table 2. Frequency Distribution of Respondents' Demographic Characteristics (n=40)

Variable	Frequency (n)	Percentage (%)
Usage of Frangipani Aromatherapy		
Mild	8	40
Normal	2	10
Moderate	6	30
Severe	4	20
Usage of Other Aromatherapy		
Mild	4	20
Normal	3	15
Moderate	9	45
Severe	4	20

Based on Table 2, the age range of respondents is between 21 and 45 years old. In the age group of 17 to 25 years old using frangipani aromatherapy, one person (33.3%) experienced mild anxiety, one person (33.3%) experienced moderate anxiety, and one person (33.3%) experienced severe anxiety. In the age group of 26 to 35 years old, six people (60%) experienced mild anxiety, two people (20%) experienced moderate anxiety, and two people (20%) experienced severe anxiety. In the age group of 36 to 45 years old, one person (14.3%) experienced mild anxiety, two people (28.6%) were in normal condition, three people (42.9%) experienced moderate anxiety, and one person (14.3%) experienced severe anxiety. The Frequency of Anxiety Based on Age can be seen in Table 3.

Table 3. Frequency of Anxiety Based on Age

Variable	Frequency (n)	Percentage (%)	
Age	Frangipani Aromatherapy		
17-25 years	Mild	1	33.3
	Normal	0	0
	Moderate	1	33.3
	Severe	1	33.3
26-35 years	Mild	6	60
	Normal	0	0
	Moderate	2	20
	Severe	2	20
36-45 years	Mild	1	14.3
	Normal	2	28.6
	Moderate	3	42.9
	Severe	1	14.3

Based on Table 3, the age of respondents ranges from 21 to 45 years old. The table indicates that within the group of respondents using Kamboja aromatherapy, in the age group of 17 to 25 years old, 33.3% (1 person) experienced mild anxiety, 33.3% (1 person) experienced moderate anxiety, and 33.3% (1 person) experienced severe anxiety. In the age group of 26 to 35 years old, 60% (6 people) experienced mild anxiety, 20% (2 people) experienced moderate anxiety, and 20% (2 people) experienced severe anxiety. Meanwhile, respondents aged 36 to 45 years old showed that 14.3% (1 person) experienced mild anxiety, 28.6% (2 people) did not experience anxiety, 42.9% (3 people) experienced moderate anxiety, and 14.3% (1 person) experienced severe anxiety. The Results of Statistical Tests on the Use of Frangipani Aromatherapy on Anxiety can be seen in Table 4.

Table 4. Statistical Test of Frangipani Aromatherapy Usage on Anxiety

		Level of Anxiety
Frangipani Aromatherapy	Correlation Coefficient	0.753
	p-value	0.000
	n	20

Based on Table 4, it is evident that the p-value of 0.000 is smaller than 0.05, indicating a significant relationship between the use of Kamboja aromatherapy and the level of anxiety. Furthermore, the correlation coefficient value of 0.753, which is positive, indicates a strong and positive relationship.

DISCUSSION

Based on the results of data analysis using the non-parametric Spearman's rho test, a p-value of 0.000 ($p < 0.05$) and a correlation coefficient of 0.753 was obtained. This indicates a significant correlation between using Kamboja flower aromatherapy and anxiety among visitors at the Padma Resort Ubud SPA. This research investigated whether

compounds in Kamboja flowers could produce effects similar to those of other commonly used aromatherapy flowers. It is hoped that Kamboja flowers can be more widely used in spas in Bali, thereby enhancing their appeal to tourists visiting Bali.

Kamboja aromatherapy is obtained from the extract of Kamboja flowers, also known as plumeria. These flowers contain triterpenoids, amyirin, geraniol, citronellol, and linalool. Research indicates that these compounds have calming effects and can induce relaxation. When inhaled, Kamboja aromatherapy activates the olfactory system and regulates neuroreceptors in the immune system, potentially reducing anxiety and stress.^{6,10}

This research is further supported by a study conducted by Fung et al. (2021), which investigated essential oils' therapeutic benefits and mechanisms of action in managing mood disorders. The study revealed that the effectiveness of aromatherapy is due to active compounds such as linalool, benzyl benzoate, and benzyl alcohol, which have been proven to influence anxiety and possess antidepressant properties. Additionally, based on several studies, it is believed that these active compounds can provide calming or relaxation effects. When inhaled, aromatherapy can stimulate the olfactory system and control neuroreceptors in the immune system, thereby reducing anxiety and stress.¹¹

The mechanism of anxiety involves the central nervous system's response to perceived threats. External or internal stimuli, including past experiences and genetic factors, can trigger this perception. Sensory input is received by the sensory organs and transmitted to the central nervous system, involving the Cerebral Cortex, Limbic System, Reticular Activation System, and Hypothalamus, which sends signals to the pituitary gland. The pituitary gland releases hormones to the adrenal glands, which activate the autonomic nervous system through hormonal mediators. Norepinephrine and serotonin are the primary mediators of anxiety symptoms in the central nervous system. The inhalation process of aromatherapy involves a chemical reaction of aromas detected by brain receptors. When inhaled, scent molecules travel through the nose to the olfactory nerve cilia receptors in the olfactory epithelium. This epithelium sends signals to the olfactory bulb through the hippocampus nerve. In the limbic system, the amygdala, which processes emotional responses, is highly involved in aroma-related activities. Olfactory stimulation can influence physiological functions such as blood pressure, muscle tension, and heart rate. Neurotransmitters such as serotonin, endorphins, and norepinephrine can be activated through aromatherapy inhalation, affecting mood and reducing anxiety and stress. Aromatherapy contains active compounds found in Kamboja flowers, which can alleviate stress and anxiety.¹⁰

Women often favour aromatherapy due to their higher susceptibility to anxiety disorders compared to men. This preference is closely related to women's higher emotional sensitivity. Therefore, this study utilises Kamboja aromatherapy for women, particularly in SPA treatments. Age also influences the level of anxiety, with a higher prevalence among adults aged 21-45 years. Research shows that individuals in this age group often experience various levels of stress, ranging from mild to severe. In the study, it was found that 40% of visitors receiving Kamboja treatments were diagnosed with mild anxiety.¹²

Based on research by Fazrina Pratiwi (2020), aromatherapy derived from plants has been shown to provide relaxation effects. This relaxation effect can offer various benefits, including reducing pain, lowering high blood pressure, and helping alleviate sleep disorders and anxiety.¹³

The researchers identified several limitations in this study. The research only focused on the relationship between Kamboja aromatherapy and anxiety without considering other variables, such as the daily activity level. Additionally, other potential factors that could affect anxiety, such as previous personal experiences, were not taken into account. The research team also encountered communication difficulties with visitors to the Padma Resort Ubud SPA, as many foreign guests were not proficient in English. Furthermore, it is hoped that readers can further develop this writing to include other variables or factors that may influence the variable.

CONCLUSION

Based on the objectives and findings of the research, it can be concluded that this study demonstrates the prevalence of anxiety disorders among visitors to the Padma Resort Ubud SPA who use Kamboja flower aromatherapy as follows: 40% experience mild anxiety, 10% fall within the standard category, 30% experience moderate stress, and 20% experience severe anxiety. Statistical analysis indicates a strong and positive relationship between the use of Kamboja flower aromatherapy and the reduction of anxiety levels.

The researchers recommend that future research conduct a more in-depth analysis of other factors that influence anxiety, such as daily activity levels and previous personal experiences. Additionally, it is suggested that the latest research instruments be used to improve the accuracy of the results. This research can serve as a valuable reference for further studies, and the public can use the findings to choose more effective SPA treatments for reducing anxiety, including considering the use of Kamboja flowers as a soothing aromatherapy option.

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