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Effect of Aroma Therapy on the Stress Alleviation and Job Satisfaction of Taxi Drivers

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Abstract

This study was carried out to find the effects of aromatherapy using natural fragrance on reducing stress and improving job satisfaction of transportation workers in the taxi industry. A total of 120 workers were divided into the experimental group and the control group according to the inhalation of the fragrance and tested for 2 weeks. After 2 weeks, the difference of emotional change, stress analysis, and evaluation of job satisfaction according to aromatherapy were compared between the two groups. The result showed that the experimental group had a higher interest in scent products than the control group and that they wanted to encounter a lot of real scents, indicating that aromatherapy caused positive interest in general scent likability. In addition, the experimental group said that the inhalation of fragrance would refresh the feeling of the passengers in the vehicle and smoothly communicate with the passengers. Especially, it showed a significant difference between the two groups in terms of tension relief, pleasure and good mood by inhalation of fragrance, indicating the positive effect on job satisfaction.

Key Words: aromatherapy, transportation workers, stress alleviation, job satisfaction, fragrance inhalation

Introduction

The domestic taxi industry is mostly small in size, so it is difficult to systematically operate it. As of June 2020, companies with less than 50 taxis accounted for 55.6% of the total, and companies with less than 100 transport workers accounted for 82.4% (Korea National Joint Conference of Taxi Association 2020). In addition, the working hours per day are high from 9 to 12 hours. Health and safety are threatened by poor working conditions such as traffic congestion, meal problems, noise pollution, and are vulnerable to increased stress and accidents (Kim 2008; Im and Choi 2012). As the stress received during communication and driving with customers is more frequent than other occupa-

tional groups, the job conditions are evaluated lower. Therefor management and countermeasures are needed to prevent deterioration in quality of life (Hwang 2006; Ko 2009). As a countermeasure for this, interest in aromatherapy, one of complementary and alternative therapies, has increased (Kim 2003).

The volatile aroma is one of main factor in taste of all the edible green plants and the volatile aroma in almost edible green leaves are suggested as essential oil compounds (Han and Lee 2010). Aromatherapy enhances vitality by using natural fragrance ingredients, and the research has been conducted in earnest as therapy using aromatic ingredients spread throughout Europe in the late 17th century (Shioda 2012). The biggest feature of aromatherapy is the treatment

of various physical and mental stress and diseases such as headache, fatigue, and insomnia, as essential oil which is a volatile fragrance extracted from flowers, leaves, stems, roots, and fruits of natural plants is absorbed into the body through the respiratory system or the skin (Ha 2000; Oh 2002). The types of aromatherapy include inhalation, diffusion, bath, massage, wet, and foot bath, and the inhalation method has the fastest effect through the olfactory and limbic systems (Buckle 1992; Buckle 1999).

Fragrance inhalation is a extravascular method which is inhaled through the respiratory system. It is used regardless of time and place and directly affects the brain. It has been spot lighted for stress management due to fewer side effects (Lee 2000; Seo 2007). These therapies are more systematically legally defined in the field of forest healing as 'forest healing is an activity that enhances the body's immunity and promotes health by utilizing various elements of nature such as scent and landscape'. Recently, it has been developed as a treatment that combines traditional usage and scientific verification (Hirano et al. 2011).

Research on this fragrance inhalation method has been mainly performed in the field of nursing such as sleep disorders and surgical recovery of elderly, hypertensive and insomnia patients (Lee 2002; Hwang 2004; Choi 2006). Some studies on stress, depression, and self-esteem were also conducted of nursing college students or middle-aged women (Park and Lee 2004; Ko et al. 2013; Kim et al. 2014). However, there have been no cases of research on fragrance inhalation methods for transportation workers, and it is difficult to grasp the effectiveness and applicability of the effect.

Therefore, this study was conducted 1) to investigate the perception of aromatherapy for transport workers in the taxi industry, 2) to determine the effect of aromatherapy on job satisfaction and reducing work stress during deriving through a fragrance inhalation method.

Materials and Methods

Study plan

The study was proceeded in the order of experiment design, aromatherapy implementation, questionnaire survey, data entry and analysis. A total of 120 deriving workers were selected two transportation companies located in Namyangju-si, Gyeonggi-do. They were not taking specific drugs, had no side effects on aromatherapy and no history of systemic or psychiatric diseases, and did not work overnight during the study period. For being designed homogeneously the selected workers were randomly constructed into a experimental group and a control group, and were reconfirmed through the homogeneity test of general characteristics such as age, gender, and education.

The experiment was conducted from October 10 to October 31, 2017, and both of the experimental group and the control group were asked to operate a taxi from 9 am to 6 pm, and then questioned. As a test method, the experimental group operated with the fragrance product evenly sprayed in the taxi 5 times using spray-type spray before the customer rode, while the control group operated without the fragrance product. The fragrance products used in the study are natural refined products containing 6 ingredients: 10% pine, 30% rosemary, 30% geranium, 15% basil, 10% grapefruit, and 5% lavender. In particular, a product mixed with fine essential oil was used for the phytoncide effect.

Data collection

A questionnaire was composed of questions such as general characteristics, emotion and stress change according to aromatherapy, and the effect of aromatherapy on job satisfaction of transportation workers. Excluding general questions, a 5-point scale of 1-point units with a minimum of 1 to a maximum of 5 was used. In particular, in order to secure the objectivity of the results for emotional change and stress, Spielberger's questionnaire widely used in previous studies of domestic aromatherapy was used (Lee 2003; Seo 2009).

Analysis method

SPSS statistics program was used for the analysis of collected data, and averages and percentages were compared to understand the general status of the subjects. A homogeneity test was performed through cross-analysis to confirm whether the general characteristics were different between the experimental group and the control group. After confirming the homogeneity between groups, t-test was performed to verify the comparative analysis of the condition and stress according to aromatherapy. The job satisfaction

was compared by expressing the number of respondents in each question of a 5-point scale as a percentage.

Result and Discussion

General status

The general characteristics of participants in the therapy experiments was checked, and homogeneity analysis was conducted by χ^2 test using the observed frequency and the expected frequency to determine whether the characteristics of the experimental and control groups were similar (Table 1). The result showed that the middle-aged or the elderly in their 50s and 60s accounted for 62.5%, and the males accounted for 90%. In the case of religion, non-religiousness was the highest among the respondents (47.5%), followed by Christianity (24.2%) and Buddhism (20.8%). In terms of the academic background of the respondents, high school graduation was the highest at 67.5%. In overall, the difference between the experimental and control groups was not showed in the general characteristics of age, gender, religion, and academic background.

There was no significant difference in the number of

Table 1. General status and homogeneity analysis of the respondents

Item	Class	Experimental group (%) (N=60)	Control group (%) (N=60)	Total	χ^2	p-value
Age	$\leq$30s	4 (6.7%)	4 (6.7%)	8 (6.7%)	4.915	0.194
	40s	13 (21.7%)	24 (40%)	37 (30.8%)		
	50s	26 (43.3%)	20 (33.3%)	46 (38.3%)		
	$\geq$60s	17 (28.3%)	12 (20%)	29 (24.2%)		
Gender	Man	53 (88.3%)	55 (91.7%)	108 (90%)	0.370	0.762
	Woman	7 (11.7%)	5 (8.3%)	12 (10%)		
Religion	Buddhist	13 (21.7%)	12 (20%)	25 (20.8%)	0.900	0.836
	Christian	16 (26.7%)	13 (21.7%)	29 (24.2%)		
	Catholic	5 (8.3%)	4 (6.7%)	9 (7.5%)		
	No religious	26 (43.3%)	31 (51.7%)	57 (47.5%)		
Education	$\leq$Middle school	12 (20%)	9 (15%)	21 (17.5%)	0.540	0.792
	High school	39 (65%)	42 (70%)	81 (67.5%)		
	$\geq$University	9 (15%)	9 (15%)	18 (15%)		
Household	One person	18 (30%)	15 (25%)	33 (27.5%)	0.384	0.849
	Two person	20 (33.3%)	21 (35%)	41 (34.2%)		
	$\geq$Three person	22 (36.7%)	24 (40%)	46 (38.3%)		
Excercise	Not at all	14 (23.3%)	11 (18.3%)	25 (20.8%)	1.694	0.894
	Once/week	20 (33.3%)	20 (33.3%)	40 (33.3%)		
	Twice/week	14 (23.3%)	17 (28.3%)	31 (25.8%)		
	$\geq$Three times/week	12 (20%)	11 (18.3%)	23 (19.2%)		
Smoking	Not at all	24 (40%)	25 (41.7%)	49 (40.8%)	3.002	0.394
	$\leq$Half pack/day	12 (20%)	12 (20%)	24 (20%)		
	<A pack/day	20 (33.3%)	14 (23.3%)	34 (28.3%)		
	$\geq$A pack/day	4 (6.7%)	9 (15%)	13 (10.8%)		
Drinking	Not at all	18 (30%)	17 (28.3%)	35 (29.2%)	0.611	0.909
	Once/week	18 (30%)	15 (25%)	33 (27.5%)		
	Twice/week	17 (28.3%)	20 (33.3%)	37 (30.8%)		
	$\geq$Three times/week	7 (11.7%)	8 (13.3%)	15 (12.5%)		
Experience of aroma therapy	Yes	14 (23.3%)	10 (16.7%)	24 (20%)	0.833	0.494
	No	46 (76.7%)	50 (83.3%)	96 (80%)		
Awareness of natural aroma	Yes	44 (74.6%)	42 (70%)	86 (72.3%)	0.311	0.683
	No	15 (25.4%)	18 (30%)	33 (27.7%)		

households with 27.5% for single-person households, 34.2% for two-person households, and 38.3% for households with three or more households. Smokers and non-smokers were found to be 59.2% and 40.8%, respectively, and smokers over 1 pack per day were relatively low at 10.8%. In the case of drinking, the result showed that 29.2% of the respondents did not drink, 27.5% drank less than once a week, 30.8% drank once or twice a week, and 12.5% drank more than three times a week. As a result, there were no differences between the experimental group and the control group in the results of examining lifestyles through household type, smoking and drinking.

Lastly, as a result of confirming the general status through questions related to aromatherapy, 80% of the respondents did not experience aromatherapy, but 72.3% answered that they have heard of natural aroma, and that they perceive natural aroma. In overall, it was analyzed that the two groups were statistically homogeneous in all 10 items of general characteristics.

Emotional change and stress analysis according to aromatherapy

Fragrance favorability change analysis

In order to find out whether aroma inhalation is favorably felt by respondents, a favorability analysis was conducted through a total of 8 questions, and significant differences were found through t-tests between the experimental group and the control group (Table 2). As a result of the analysis, the study subjects responded that they could change their mood when they smelled their favorite scent,

and feel better when there were scents around them, such as at home and at a scent store. In particular, the mean of the experimental group was 4.1-4.2 points, which was 0.5 points higher than the control group (3.6-3.8 points), showing a significant difference between the groups (p < 0.01).

It was analyzed that experimental group were interested in scent products as they thought that there should be scent around, and the difference between the two groups was also very significant as the average of the experimental group was 0.6-0.7 points higher than the control group (p < 0.01). This led to the desire to own an actual fragrance product, and the intention to receive or purchase fragrance products for the experimental group was 0.7 points higher than the control group. However, both the experimental group and the control group showed an average of 3.1 points without any significant difference in feeling the economic burden of the cost incurred in the actual purchase (p=0.783). As a result of analyzing the average aroma preference of the experimental group and the control group, it was judged that the inhalation of the fragrance had a positive effect on the aroma preference (p < 0.01).

Change in perception of aromatherapy while driving

We have examined how it affects the perception of natural scent therapy and the work environment when it comes into contact with natural scent (Table 3). As a result of comparative analysis of the test group with the natural scent and the control group with no natural scent, it was recognized that the natural scent was good in the experimental group

Table 2. Preference survey about aroma

No	Question	Experimental group (N=60)	Control group (N=60)	Difference	t	p-value
1	Do you think feelings can be changed by the preferred aroma?	4.2±0.7	3.8±0.8	0.441	3.038	0.003***
2	Do you feel better if you smell aroma at home?	4.1±0.8	3.6±0.9	0.553	3.542	0.001***
3	Do you feel better if you smell aroma at shop?	4.2±0.6	3.7±0.8	0.505	3.964	0.000***
4	Do you wish there be aroma around you?	4.0±0.7	3.4±0.9	0.677	4.541	0.000***
5	Are you interested in aroma products?	3.7±0.8	3.0±0.8	0.723	5.042	0.000***
6	Do you want to receive an aroma product as a present?	4.0±0.9	3.3±1.0	0.729	4.202	0.000***
7	Are you willing to purchase an aroma product?	3.9±0.8	3.2±0.9	0.731	4.827	0.000***
8	Does the purchase of an aroma product offer an financial burden?	3.1±0.9	3.1±1.0	0.049	0.276	0.783
	Average	3.9±0.6	3.4±0.6	0.514	4.870	0.000***

***Significant at 1% level.

Table 3. Awareness of natural aroma on job environment

No	Question	Experimental group (N=60)	Control group (N=60)	Difference	t	p-value
1	It is likely to smell good.	4.0±0.8	3.5±0.8	0.483	3.413	0.001***
2	It is likely to make feel refresh.	4.2±0.8	3.6±0.7	0.533	3.911	0.000***
3	It is likely to be healthy.	3.7±0.8	3.4±0.7	0.367	2.539	0.012**
4	It is likely to be efficient.	3.7±0.7	3.3±0.8	0.435	2.980	0.004***
5	It is likely to be relative to phytoncide.	3.6±0.7	3.2±0.7	0.407	3.066	0.003***
6	It is likely to make taxi drivers and passengers communicate smoothly.	3.9±0.8	3.5±0.8	0.433	3.066	0.003***
7	It is likely to improve the task efficiency.	3.9±0.8	3.3±0.8	0.650	4.560	0.000***
	Average	3.9±0.6	3.4±0.6	0.465	4.212	0.000***

**Significant at 5% level. ***Significant at 1% level.

Table 4. Scale analysis of state anxiety and stress by aroma therapy

No	Question	Experimental group (N=60)	Control group (N=59)	Difference	t	p-value
1	I feel calm.	3.45±0.65	3.32±0.63	0.128	1.093	0.277
2	I feel secure.	3.27±0.61	3.20±0.66	0.063	0.543	0.588
3	I feel tense.	2.63±0.81	2.75±0.73	-0.119	-0.836	0.405
4	I feel strained.	2.35±0.90	2.32±0.73	0.028	0.186	0.853
5	I feel at ease.	3.44±0.77	3.34±0.61	0.096	0.745	0.458
6	I feel upset.	2.19±0.74	2.32±0.84	-0.132	-0.906	0.367
7	I don't know what to do in embarrassment.	2.45±0.89	2.34±0.78	0.111	0.723	0.471
8	I feel satisfied.	3.38±0.69	3.28±0.77	0.107	0.800	0.425
9	I feel frightened.	2.34±0.86	2.20±0.71	0.136	0.930	0.354
10	I feel comfortable.	3.49±0.68	3.37±0.72	0.119	0.923	0.358
11	I feel self-confident.	3.37±0.78	3.42±0.67	-0.057	-0.426	0.671
12	I feel nervous.	2.14±0.82	2.14±0.71	0.000	0.000	1.000
13	I am jittery.	2.37±0.88	2.20±0.74	0.163	1.094	0.276
14	I feel indecisive.	2.17±0.86	2.29±0.87	-0.116	-0.722	0.472
15	I am relaxed.	3.25±0.71	3.02±0.66	0.237	1.868	0.064*
16	I feel content.	3.34±0.82	3.24±0.54	0.098	0.758	0.450
17	I am worried.	2.32±0.75	2.41±0.77	-0.090	-0.648	0.518
18	I don't know what to do with excitement.	2.18±0.79	2.24±0.70	-0.054	-0.393	0.695
19	I feel steady.	3.50±0.68	3.17±0.62	0.331	2.777	0.006***
20	I feel pleasant.	3.50±0.72	3.24±0.60	0.263	2.156	0.033**
	Average	2.86±0.30	2.79±0.30	0.070	1.271	0.206

*Significant at 10% level. **Significant at 5% level. ***Significant at 1% level.

that aspirated the natural scent. It was positively evaluated in the experimental group that the inhalation of natural fragrance would likely refresh the mood of the passengers and passengers in the vehicle. They also said that they would have good health and efficacy, and were evaluated favorably because they thought that the natural smell group was more closely related to phytoncide, commonly known as a forest healing material.

It was recognized that work efficiency would increase by helping communication with passengers. Kim (2012) reported that aroma scent therapy was conducted for full-time housewives, and the inhalation of scents relieved fatigue

and depression and improved mood. Therefore, similar to this study, aromatherapy was found to be effective for housework. Overall, the perception of natural scent therapy was positive, and it was recognized that it had an effect on the job effectively.

Comparing state anxiety and stress

The effect of the aroma inhalation on psychological factors was compared and analyzed through 20 questions measuring Spielberger's state anxiety and stress which had been widely used in prior studies on aromatherapy (Table 4). The result showed that the experimental group who smelled the scent responded that they felt pleasant and feeling good (p＜0.05), and they felt relaxed and warm (p＝0.064). These positive effects were similar in other prior studies on aromatherapy (Park and Lee 2004; Jin et al. 2005). In particular, Seo (2009) studied stress reduction through aromatherapy in high school students and reported that it has a positive effect on reducing academic stress.

However, there were no significant differences in such questions as whether the mind was calm, strong, anxious, or irritable, which were a measure of stress change. Other precedent studies on aromatherapy also showed a significant difference only in some of these items. For example, only the questions that asked about tension and anxiety were significantly different in the study of middle-aged clinical nurses by Jin et al. (2005). It was effective only in improving sleep and reducing depression. In a study on the elderly by Lee (2003). Moreover, Oh et al. (2014) reported that the therapy was not different in the degree of stress between the experimental group and the control group in a

Fig. 1. Job satisfaction change by aroma therapy.

study on women shift works. In conclusion, difference was not found in all the items of aromatherapy and it was showed significantly different according to the subjects and circumstances of the study.

Effect of aromatherapy on job satisfaction

To examine the changes in job satisfaction among transportation workers according to aromatherapy, 7 questions with a 5-point scale were surveyed in the experimental group (Fig. 1). Sixty eight percent of the transportation workers said that they felt better after they smelled the aroma, 71% said their mind became calm, 67% said that the atmosphere in the vehicle was improved while deriving, and 83% responded that they felt good.

Due to these positive effects, 45% said that their work stress was reduced and depressed mood was relieved, and 64% had a positive effect on the operation. Therefore, aromatherapy was shown to have a positive effect on the feelings of both the workers and the passengers, and be effective to increase the job satisfaction of the workers.

Conclusion

This study conducted aromatherapy experiments and conducted questionnaire surveys to find its effect on reducing job stress of transportation workers. Using a natural fragrance essential oil product, the experiment was conducted to a total of 120 workers. They were randomly distributed 50% in the experimental and control groups and the homogeneity test of general characteristics was reconfirmed whether the two groups were homogeneous. The main findings of this study are as follows.

As a result of analyzing the aroma sensibility of whether the inhalation of scent makes the subject feel favorable, the experimental group showed a high score of 4.1-4.2 on average. In addition, they hoped to have fragrance around them, were interested in fragrance products, and responded that they wanted to own more fragrance products.

In the analysis of the perception of natural scent therapy and its effect on the work environment, the experimental group that inhaled the natural scent recognized that the natural scent was good, and positively evaluated that the inhalation of natural scent would likely refresh the feelings of the drivers and passengers in the vehicle. They were more
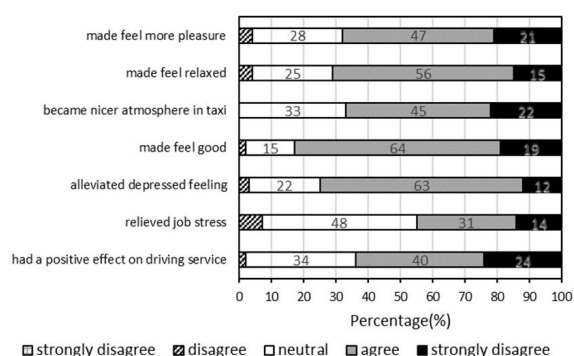
favorable, saying that they seemed to have good health and efficacy. They also recognized that the efficiency of work would be increased by helping communication with passengers. In overall, the perception of natural scent therapy was found to be positive, and it was recognized that it had an effect on the job effectively.

In measuring the state of stress change through Spielberger's state anxiety measurement item, the experimental group in the scent responded that the inhalation was pleasant, pleasurable, and warm. On the other hand, there was no significant difference in all the items that measured stress change. As a result of analyzing the job satisfaction of the transportation workers according to the therapy, they responded that they felt better and had a calmer mind than they had been before smelling. In addition, they responded that the atmosphere with the passengers was improved and the mood became good.

According to these positive influences, it was considered that the depressed mood of transportation workers was relieved, work stress was reduced, and it had a positive effect on the operation. Therefore, the therapy was found to be effective in increasing job satisfaction of the transportation workers by positively affecting the mood condition of the transportation workers and passengers. The results of this study are expected to be used as part of a complementary alternative therapy to reduce stress and improve job satisfaction in the future.

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