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ORIGINAL ARTICLE

The use of aromatherapy to improve self-esteem

O USO DA AROMATERAPIA NA MELHORA DA AUTOESTIMA

EL USO DE AROMOTERAPIA EN LA MEJORA DE LA AUTOESTIMA

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ABSTRACT

The objectives of this study were to verify if inhaling rose and ylang-ylang essential oils has any effect on one's perception of self-esteem, and compare their efficiency. The study was approved by the University of São Paulo Hospital Research Ethics Committee. Participants were 43 workers from the Sanitation Department and from the Materials and Sterilization Center, and the study took place from May to July 2009. Subjects were randomly assigned to one of three groups: two that received the essential oils and a third that received placebo (rose essence). The self-esteem evaluation was performed using a scale validated in Brazil, which was applied before using the aromas, as well as 30 and 60 days after the use. Results showed that the sample consisted of 88.6% individuals with medium and high self-esteem, and that the essential oils did not make any significant changes to their perception of self-esteem.

RESUMO

Os objetivos deste estudo foram verificar se a inalação dos óleos essenciais de rosa e de ylang-ylang alteram a percepção da autoestima e comparar a eficácia dos mesmos. O projeto foi aprovado pelo Comitê de Ética em Pesquisa do Hospital da Universidade de São Paulo. Participaram 43 funcionários dos setores de Higienização e da Central de Materiais e Esterilização durante os meses de maio a julho de 2009. Os sujeitos foram randomizados em três grupos: dois que receberem os óleos essenciais e outro que recebeu placebo (essência de rosa). A avaliação da autoestima foi feita através de uma escala já validada no Brasil, sendo aplicada antes do uso dos aromas, depois de trinta dias de uso e ao completar sessenta dias. Dentre os resultados, verificou-se que a amostra era constituída por 88,6% de indivíduos com média e alta autoestima, e que os óleos essenciais em questão não alteraram de forma significativa a percepção da autoestima.

RESUMEN

Estudio que objetivó verificar si la inhalación de aceites esenciales de Rosa y de Ylang-ylang altera la percepción de la autoestima, y comparar la eficacia de ambos. El proyecto fue aprobado por el Comité de Ética en Investigación del Hospital Universitario de la Universidad de San Pablo. Participaron 43 empleados de los sectores de Higienización y Central de Materiales y Esterilización, de mayo a julio de 2009. Los sujetos fueron randomizados en tres grupos: dos recibieron los aceites esenciales y el otro placebo (esencia de Rosa). La evaluación de autoestima se realizó mediante escala ya validada en Brasil, aplicándosela inicialmente, luego de 30 días de uso y al completarse 60 días. Según los resultados, se verificó que la muestra estaba constituida por 88,6% de individuos con media y alta autoestima y que los aceites esenciales en cuestión no alteraron significativamente la percepción de la autoestima.

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INTRODUCTION

The São Paulo Municipal Health Law 13.717, issued in 2004, defines Natural, Alternative or Complementary Therapies as *all health promotion and disease prevention practices that basically use natural resources*[1]. These practices can be considered Alternative when conventional medicine is excluded, or Complementary when allied with the allopathic medical technique[2].

In the current global context, just like traditional medicine has been noteworthy for its technological advances, the use of complementary therapeutic techniques has stood out in Western developed countries as well as in poor and developing countries[3]. The growth of these therapies is related not only with their effectiveness and low cost, which have been proven in countless studies, but also with the holistic care view, previously described in different Nursing Theories[4].

This new healthcare trend has been reflected since the 1970's, when the World Health Organization (WHO) determined that the Institution of Alternative Medicines is a valid and significant instrument, mainly for health promotion to the most needy populations[5]. Later, in the document on Traditional Medicine Strategies issued in 2004, WHO underlined the need to strengthen policies that enhance the rational use of complementary therapies in national healthcare systems, beside recommending research to verify the effectiveness and safety of these practices[6]. Brazilian Public Health has adapted to this panorama through the Unified Health System (SUS), through Decree 971, which encourages and regulates on the use of some complementary therapies at care units in States, Cities and the Federal District[7].

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In this context, Nurses play a fundamental role. Not only are they one of the main professionals in the health area, but it are also Nurses who establish deeper bonds with the community and are apt to provide clarifications and orientations about the use of these therapeutic techniques[8]. Besides, for Nursing, these therapies also represent the possibility of yet another activity area as, through COFEN Resolution 197, issued in 1997, Complementary Therapies have been fixed as a Specialty of Nursing professionals, provided that they conclude some course in the specific area, at an acknowledged teaching institution, with a minimum hour load of 360 hours[9].

Aromatherapy figures among these practices and is based on the use of volatile and concentrated plant extracts, aimed at modifying people's mood or behavior and improve their physical, mental and emotional well-being. Essential oils are condensed fluids obtained from distilled plant materials, with highly complex chemical molecules[10]. These substances can act in different ways in the organism and can be applied directly on the skin or inhaled. When they work through smell, the oil molecules are absorbed by the olfactory nerves, which are directly connected with the Central Nervous System and take the stimulus to the Limbic System, responsible for feelings, memories, impulses and emotions. When they act through the skin, the molecules are absorbed and enter the blood circulation, where they are transported to body tissues and organs. Finally, when ingested, the intestines absorb the essential oils and take them to the different body tissues[11].

Nurses deal directly with comprehensive healthcare, aiming to take care of their clients' physical and mental wellbeing. Thus, for these professionals, Aromatherapy can represent a new tool, to be used to treat both physical and emotional imbalances, like in care delivery to people with low self-esteem for example.

Self-esteem is conceptualized as a relatively stable trend to feel well (positive) or bad (negative) about oneself. When it is positive, it expresses the individual's feeling of considering oneself *good enough* and capable, without necessarily feeling superior to others. When negative, however, it implies self-rejection, dissatisfaction and disdain towards oneself, making the individual want to be invisible to other people's eyes. The acceptance or rejection level of oneself constitutes a learning phenomenon that covers the entire personal existence[12].

As Nursing care is also based on the perception of the individual's self-image[13], through Aromatherapy, people can receive a new chance to develop a positive visualization of their self-image.

According to research, the self-image concept is defined as an important Mental Health indicator[14]. To assess each person's level of self-esteem, using reliable instruments is essential. Dela Coleta proposed a scale, previously validated in Brazil, based on daily assertions and aimed at measuring the self-esteem level[15]. It is based on this scale, and using Aromatherapy as an instrument for transformation, that the authors intend to achieve the present research aims.

To develop the research, two hygiene-related sectors from the University of São Paulo University Hospital (HU-USP) were chosen. The first – the Sanitation sector – costly comprises long-time employees with a long career in the area. As a result of the activity itself and the workers' age, physical restriction is a common and relevant factor that can interfere in self-esteem and even impair professionals if they are not accepted in their midst. The other sector – the Material and Sterilization Center (MSC) – has historically concentrated workers who display relationship problems in direct patient care deliver, disagreements interfering in the relation with the work team or health problems

that limit their motor activities[16]. For decades, these professionals were transferred to the MSC, because work at that unit was considered less complex, as workers did not perform activities that were considered noble to Nursing and, hence, there was no need to maintain more qualified professionals to accomplish material reprocessing tasks. Although on a lesser scale, this situation continues at most health services. In addition, the physical location, often adapted and inappropriate, with insufficient or outdated material and technological resources, can arouse the feeling of professional devaluation. These factors can contribute to the group's low self-esteem.

Although this scenario is currently changing, this stigma can still affect its employees' self-esteem. Hence, these two hygiene sectors, which are fundamental for quality care, gain interest for the development of this research, as employees' good self-esteem can result in greater satisfaction with work. Therefore, this study proposed the use of Aromatherapy as an intervention, through the inhalation of essential Rose or Ylang-ylang oils or Rose essence (Placebo group). According to Aromatherapy literature[10-11,17], these two essential oils are indicated to improve self-esteem, although each of them acts on the limbic system in a subtly different way. This bibliography[10-11,17] asserts that both Rose and Ylang-ylang oil, due to the fact that they chemically belong to the functional group of terpenic alcohols and are compounds deriving from mevalonic acid, comprising hydrocarbons and hydroxyl group, their fragrance is animating and pleasant. The composition of both oils under analysis contains geraniol, which grants them similar action characteristics[17]. Ylang-ylang oil is indicated for frustrations, fears and depressions, while Rose oil is recommended for emotional traumas, dislikes, depressions and sadness[18]. Thus, as found in Aromatherapy research[10-11,17], the group using essential oil from Roses is expected to experience a considerable improvement in self-esteem, followed by the group using Ylang-ylang oil and, finally, that the group using the placebo will not experience any improvement.

The goals of this research were to verify if the use of essential Rose and Ylang-ylang oil alters the perception of self-esteem and to compare the efficacy of Rose and Ylang-ylang oils on perceived self-esteem.

METHOD

This experimental field study with a quantitative approach involved employees from the Sanitation and MSC sectors of the University of São Paulo University Hospital (HU-USP). The research project was subject to and received approval from the Institutional Review Board at the same Hospital.

All employees from the abovementioned sectors were invited to participate, provided that they complied with the following inclusion criteria: a) being an employee at the sector for at least 6 months; b) accepting to participate in the research, answering the Self-esteem scale, using the essential oil or essence and signing the Informed Consent Term (ICT). Holidays or medical leave during the study period were considered an exclusion criterion. All interested employees were previously warned about the immediate minimum risk of participation for those people allergic to Rose or Ylang-ylang aromas, as these could respond with hypersensitivity reactions. In case of some problem deriving from the research, care would be available at the same University Hospital.

The employees who accepted to participate, after being informed about the research aims and methods, signed the ICT and were randomly assigned to one of the three groups: group that would receive essential Rose oil, group that would receive essential Ylang-ylang oil or control group – which received Rose essence. The researchers called the groups G1, G2 and G3, respectively, so as to facilitate blinding. None of the participants previously knew what oil or essence (s)he used.

After randomizing the participants to one of the three groups, each of the subjects answered Dela Coleta's self-esteem scale[15]. This scale, already validated by the author, comprises 15 right-wrong assertions, which result in the participant's self-esteem score after the application of a template. The self-esteem classifications are equivalent to a score from 0 to 5 for low self-esteem, 6 to 10 for average and 11 to 15 for high self-esteem. The described scale was used to assess the participants' self-esteem at three times: immediately before starting to use the aromas, thirty days later and after sixty days of use. Besides the self-esteem score, the following data were collected through a questionnaire: name (initials), age, gender, time working at the sector and education level.

After completing the self-esteem scale, each participant started to receive a drop of oil or essence at the start of his/her work shift, according to the assigned group. The drop was dripped onto a cotton pad placed in a personal aroma diffuser, which the researchers provided to each of the participants, and which they used daily around their neck during the proposed study period. The personal aroma diffuser consists of a cord, both ends of which are tied to a small ceramic receptacle, in which a cotton pad is placed, infused with the drop of essential oil or essence to be inhaled. Subjects used these aroma diffusers during their work shift for 60 days. After having used the personal diffuser and its contents for 30 days, the participants answered Dela Coleta's scale, which was again applied after completing 60 days of use.

After data collection, the answers to the questionnaires were subject to quantitative analysis. Data were inserted in Microsoft Excel® worksheets and processed in SPSS® version 1.80. Using this program, the researchers analyzed data through a general linear model – Variance Analysis (ANOVA) – aimed at assessing the differences be-

tween the subjects' means before and after each month of using the essential oil. The premises of Variance Analysis are the normality and homogeneity of variances[19]. To check normality, Kolmogorov-Smirnov's test was used, while the Levene test was used to check the homogeneity of variances.

It is also important to highlight that, at the end of data collection, for ethical reasons, the control group members received the opportunity to use one of the oils (Rose or Ylang-ylang) according to their preference.

RESULTS

Fifty-nine volunteers were willing to participate in the study, 40 from Sanitation and 19 from the MSC. Forty-three of them actually concluded the study. Twelve out of 16 participants who dropped out did so before completing one month of study and only four after more than 30 days of using the aroma. The group that used Ylang-ylang oil, called G2, included 21 participants (14 from Sanitation and 7 from MSC), 15 of whom concluded the research. Group G1, which used essential oil from Roses, included 19 subjects (13 from Sanitation and 6 from MSC), five of whom dropped out. Finally, the control group – which used Rose essence – called G3, included 19 participants (13 from Sanitation and 6 from MSC) and finished the research with 14. Figure 1 shows the subjects' flow chart in their respective groups.

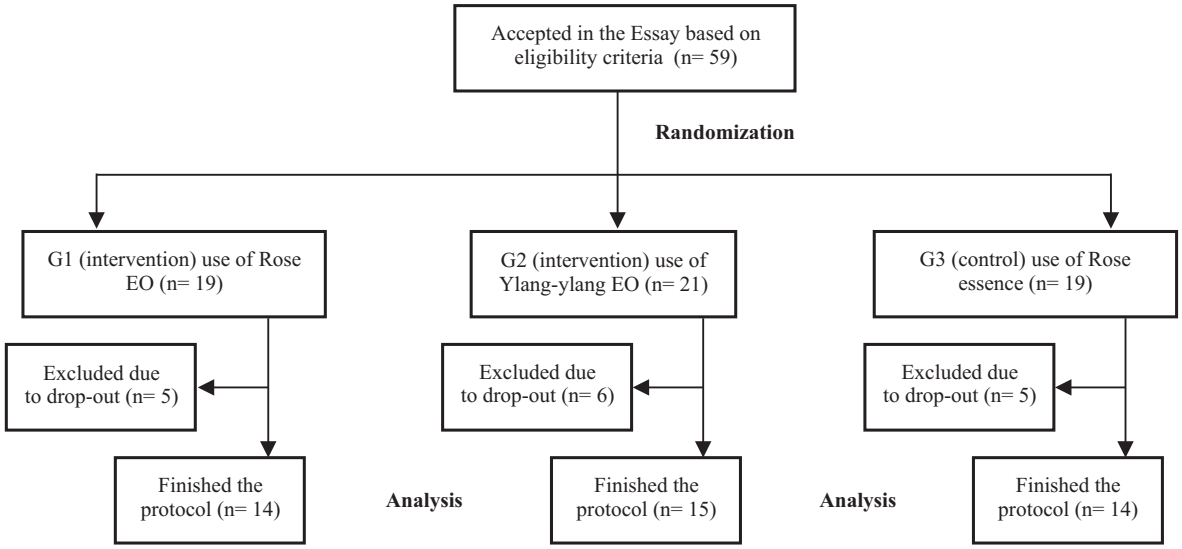

Figure 1 – Flow of subjects across the study. EO = Essential Oil

The mean ages were G1=49.42, G2 = 47.14, and G3 = 46.37 years, with a standard deviation of 8.95, 8.09, and 8.54, respectively; the employees' mean experience at the units corresponded to G1 = 13.76, G2 = 13.40 and G3 = 13.44 years, with a standard deviation of 6.09, 7.56 and 7.42, respectively. Regarding gender, only two participants were men, indicating that 96.61% of participants were female.

As for the education level, subjects who had finished Secondary Education predominated (42.4%), followed by participants who had finished Primary Education (25,4%) and Higher Education (13.9%). Individuals with unfinished Primary Education (1.7%) were the least representative group; the remaining 16.5% referred to unfinished Secondary or Higher Education. Most participants (72.9%) were involved in a stable relationship at the time of study.

To check whether the groups were similar in terms of age and experience after the randomization, two Variance Analyses were performed, considering the factors aroma and gender. Age ($p = 0.437$) and experience ($p = 0.612$) showed normality and homogeneity in the variances ($p = 0.665$ and $p = 0.367$), respectively.

No difference was found among the three groups in terms of mean age ($p = 0.893$) and experience ($p = 0.993$). No difference in mean time of experience was identified for gender ($p = 0.081$) and age ($p = 0.025$), although the difference in group size should be highlighted, as there were only two male representatives, against 57 female participants.

As the self-esteem scale was applied at three times: before starting to use the aroma, after 30 days and after

60 days of use, the Variance Analysis for Repeated Measures test was applied, considering the groups as the factor and age and experience as co-variables. As the sphericity assumption was not complied (Mauchly test p = 0.000), the Greenhouse-Geisser correction was used for the hypothesis test. The results are shown in Table 1. It is important to highlight that the gender variable was not used as a factor due to the small number of males in the sample.

Table 1 – ANOVA for the effect of the aroma used among participants according to the self-esteem questionnaire and the co-variables age and time of work – São Paulo - 2010

Source of variation	DF	Mean Square	F	p-value
Mean of questionnaires	1.508	350.115	0.474	0.570
Age	1.508	1459.236	1.977	0.156
Experience	1.508	1058.485	1.434	0.243
Group	3.015	142.854	0.193	0.901
Error	79.906	738.267		

DF: Degree of freedom

According to Table 1, no difference was found among the mean scores on the three repetitions (p = 0.570), among the groups (p = 0.901) and according to age (p = 0.156) and experience (p = 0.243). As the ANOVA of Repeated Measures showed no differences, the researchers attempted to simplify the analysis by establishing the differences between the scores on the first (before starting to use the aroma) and third applications (after 60 days of use). Table 2 shows the descriptive statistics for these differences.

Table 2 – Description of the difference in self-esteem scores between the first and third application of the questionnaire according to the groups – São Paulo - 2010

Group	Minimum	Mean	Standard deviation	Median	Maximum	N
G1	-5.00	-1.07	1.38	-1.00	0	14
G2	-6.00	-1.80	3.12	-2.00	7	15
G3	-9.00	-1.86	3.06	-1.50	2	14

The mean variable of differences between the first and third application of the questionnaire showed normal distribution (p = 0.057) and homogeneity of variances (p = 0.132). ANOVA did not indicate any difference among the groups (p = 0.684).

The statistical analysis described until now was based on the inclusion of all research participants. The first questionnaire application, however, revealed that this research did not involve individuals with low self-esteem, as most participants scored average or high self-esteem, as shown in Table 3.

Therefore, it was considered important to reassess the results, departing from the score classification obtained on the first application of Dela Coleta's questionnaire. In other words, the subjects were classified according to their score on the first application of the questionnaire and divided according to low, average or high self-esteem.

Table 3 – Distribution of participants' self-esteem score on the first questionnaire application, according to Dela Coleta's ranking – São Paulo - 2010

Self-esteem	G1		G2		G3		Total	
	N	%	N	%	N	%	N	%
Low	1	7.1	2	13.3	2	14.3	5	11.6
Average	2	14.3	6	40.0	3	21.4	11	25.6
High	11	78.6	7	46.7	9	64.3	27	62.8
Total	**14**	**100**	**15**	**100**	**14**	**100**	**43**	**100**

First, only those subjects who scored up to 5 (equivalent to low self-esteem) on the first application were selected. For subjects classified as low self-esteem (n = 5), the difference between the first and third application showed normal distribution (p = 0.577), but no homogeneity of variances (p = 0.000). Kruskal-Wallis' test was applied and no significant difference was found among the groups (p = 0.687) in terms of improved self-esteem.

Next, the results of participants who scored between 6 and 10 on the first application were assessed, including only subjects with average self-esteem. These were distributed as follows: 6 belonged to G2, 2 to G1 and 3 to G3. For subjects classified as average self-esteem (n = 11), the difference between the first and third applications showed normal distribution (p = 0.436) and homogeneity of variances (p = 0.112). ANOVA indicated no difference in mean scores (p = 0.714).

The final analysis only included those subjects who scored up to 10 on the first application, that is, participants with low and average self-esteem. Thus, the sample included 3 individuals from G1, 8 from G2 and 5 from G3 and the ANOVA indicated no difference among the groups (p = 0.714).

DISCUSSION

Before starting to analyze this study, bias is revealed in its elaboration: the fact that the method did not determine the selection of subjects with low self-esteem scores only (between 0 and 5) on the data collection instrument, in this case Dela Coleta's Scale.

The premise that self-esteem would be low among the employees from the sectors under analysis (MSC and Sanitation) derives from references in the Nursing area, which mention that most workers at these units experience relationship and health problems, which could affect their self-esteem. Out of 43 participants who finished the study, however, only 5 experienced low self-esteem when they first answered the questionnaire, which goes against the literature[16] used as the base to define the population for this clinical trial. This demonstrates that the research departed from a sample that was wrongly selected and even leaves room regarding the need for further research on employees' profile at these sectors, as the result found reflects a positive change, which differs from the stigma these professionals have carried.

Although the attested Aromatherapy literature[10-11,17] indicates the use of the oils chosen for this research to improve countless emotional factors that can interfere in individuals self-perception of wellbeing, even based on scientific principles, no descriptions of quantity, usage time or application forms are mentioned. As no similar research was identified, the researchers had to establish the data collection procedures for this study, defined as the daily inhalation of one drop of essential oil or essence for 60 days. Other results may be obtained if the aroma were used with skin contact, as some publications have assessed the absorption of essential oils and found the presence of linalool in the blood five minutes after a massage with lavender oil[20].

After accomplishing this research, no ideal application form can be affirmed yet. It is suggested that skin contact with essential oils may be needed to achieve satisfactory results. Hence, data collection for this study reveal the need for further scientific studies, varying in methodological design, mainly regarding application route, frequency and usage time of the aromas, as research on complementary practices is still very incipient.

As already longstanding literature on the potential of essential oils and their respective chemical groups exists around the world, it is believed that this fact underlines the need for further research, as it would be mistaken to determine the effectiveness or not of essential oils based on one single study, aimed at one specific area, in this case self-esteem. In other words, the fact that the present study results did not prove the effectiveness of this practice through the method used does not guarantee that Aromatherapy is not effective; to give an example, if used through other application routes or at different doses and usage frequencies. References can be found in books on the use of essential Rose and Ylang-ylang oils to improve self-esteem, but no journal reports exist on experimental studies. Again, further research in the area is needed, as the effectiveness of these essential oils could not be verified based on the research results, nor which of them would be most indicated to improve self-esteem, as subjects from the three groups manifested improvements, although not statistically significant.

Essential oils are highly complex chemical molecules and the processing of these olfactory notes in our limbic system does not necessarily occur identically in all individuals. It is known that smells arouse memories, which can be good or bad; countless variables intrinsic to the subject, such as culture and personality, can influence the reading of these complex molecules. In addition, according to a Systematic Review[21] that assessed publications on Aromatherapy and analyzed the effects of aromas on physiology, mood and behavior, countless variations of the same aroma exist, which have been used in laboratories with similar results, suggesting that it is not the psychological perception of the molecule's chemical structure that matters. The functioning of the structure, however, was investigated using a test with chemically identical molecules, which showed small differences in molecular orientation. Apparently, it was concluded that the chirality caused by the asymmetric carbons in these compounds will influence the results due to the chiral molecules' different orientations, that is, these molecules will connect differently to the limbic system receivers. The olfactory receivers especially serve to mold adjustment interactions, and that is why the molecules' different chiral forms produce mutually different smells[21].

Based on those considerations, this research was reassessed and it was inferred that the choice of a placebo for the control group may be a flaw in research on complementary practices as, if any aroma can stimulate the olfactory receivers, just like EO, the essence will also interact with these receivers, and can hence produce some kin of response in the limbic system. It is known that this system

is directly related with our behavior, feelings and emotions. Hence, the essence's stimulus can awake some kind of olfactory memory, mainly because this variant of the Rose aroma is much more present in the population's daily aromatic reality than the molecules of pure essential oil of Roses or Ylang-ylang, as this raw material is expensive and hardly used in industries that aromatize their products, like cosmetics, cleaning and food products.

One difficulty faced in the elaboration of this study was that, although the main books accepted in Aromatherapy indicate the use of essential oils, no reference is made to how they reached these results, nor is it mentioned whether research was performed in this area.

Due to the fact that self-esteem is complex knowledge, involving a set of the subject's feelings about him/herself, which can be positive or negative[12], despite having used a validated scale, it is observed that each of the phrases in that instrument addresses different aspects of the individuals' self-acceptance or rejection, but does not appoint what constituent aspects of self-esteem are wanting. In addition, this divergence in the results of self-esteem assessments when Dela Coleta's scale is applied and as found in studies involving MSC workers may be due to the fact that, in this instrument, questions are more directed at feelings towards contact with the family and community people are inserted in, that is, the scale assesses self-esteem factors beyond the professional context. If some questions in the instrument addressed feelings towards other health professionals, different nuances characterizing impaired self-esteem could be detected.

CONCLUSION

According to the proposed aims, it was verified that essential Rose and Ylang-ylang oils did not significantly alter perceived self-esteem. Therefore, their effectiveness could not be compared, as neither participants who used the essential oils nor those who used Rose essence (placebo) presented significant improvements. It should be highlighted, though, that average and high self-esteem predominated in the study population. Therefore, the results of individuals who obtained an average self-esteem score on the first application were also analyzed, without any difference among the groups. Finally, subjects with low or average self-esteem on the first application were analyzed, which did not show any difference in mean scores either.

Further studies with different methods and data collection instruments, in this case the self-esteem assessment scale, are needed, as Aromatherapy represents a vast research area. This kind of research, specifying dose, time and application forms, adds knowledge to Nursing and Complementary Practices. Many yet unknown variables include not only the application form and use of essential oils, but also countless factors intrinsic in individuals, like personality and culture. It is highlighted, however, that the application of a validated scale in a study on complementary health practices represents an advancement in Brazil.

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