# Effect of auriculotherapy on pain and sexual function of primary dysmenorrhea female patients

*Efeito da auriculoterapia na dor e função sexual de mulheres com dismenorreia primária*

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## ABSTRACT

**BACKGROUND AND OBJECTIVES**: Dysmenorrhea is characterized by pain in the abdominal and pelvic region, of chronic and cyclic origin, associated with menstruation, more prevalent in childbearing age women, and occurs in adolescence after the onset of the ovulatory cycles. The objective of this study was to analyze the effects of auriculotherapy on pain levels and sexual function in women with primary dysmenorrhea.
**METHODS**: This is a longitudinal, prospective, randomized controlled, blinded clinical trial with a quantitative approach, with 168 students of a higher education institution.
**RESULTS**: The controlled groups in the intragroup analysis did not present significant results on pain, while one of the experimental groups presented significant values, In the intergroup data, only the controlled and one experimental showed significant values. Regarding the female sexual function analysis, none of the groups presented significant data.
**CONCLUSION**: Auriculotherapy proved to be beneficial in reducing the level of pain.
**Keywords**: Acupuncture, Auriculotherapy, Dysmenorrhea, Traditional Chinese Medicine.

## RESUMO

**JUSTIFICATIVA E OBJETIVOS**: Dismenorreia é caracterizada por dor na região abdominal e pélvica, de origem crônica e cíclica, associada à menstruação, mais prevalente em mulheres em idade reprodutiva, e ocorre na adolescência após o inicio dos ciclos ovulatórios. O objetivo deste estudo foi analisar os efeitos da auriculoterapia nos níveis de dor e na função sexual de mulheres com dismenorreia primária.

**MÉTODOS**: Estudo clínico longitudinal, prospectivo, controlado randomizado e cego com abordagem quantitativa, realizado em 168 alunas de uma instituição de ensino superior.
**RESULTADOS**: Os grupos controlados na análise intragrupos não apresentaram resultados significativos sobre a dor, enquanto um dos experimentais apresentou valores significativos. Nos dados intergrupos, apenas os controlados e um experimental apresentaram valores significantes. Em relação à análise da função sexual feminina, nenhum dos grupos apresentou valores significativos.
**CONCLUSÃO**: A auriculoterapia mostrou-se benéfica em relação à redução do nível de dor.
**Descritores**: Acupuntura, Auriculoterapia, Dismenorreia, Medicina Tradicional Chinesa.


## INTRODUCTION

Dysmenorrhea is characterized by pain in the abdominal and pelvic region of chronic and cyclic origin, associated with menstruation, popularly called menstrual cramps. About 50 to 90% of women present this condition at some stage of life[1]. It can be classified as primary or secondary. Primary dysmenorrhea (PD) is described as painful menstruation among women without pelvic changes, with an onset between 6 to 12 months after the first menstruation. Secondary dysmenorrhea is associated with pelvic diseases such as endometriosis and fibroma, and its onset occurs only years after menarche. More than 50% of menstruating women worldwide suffer from PD, and 10-20% describe the pain as severe and distressing[2].
PD is a more prevalent gynecological condition in childbearing-age women and occurs in adolescence after the establishment of the ovulatory cycles. This pain reduces with age. Some aggravating factors include early menarche, low or high body mass, prolonged or aberrant menstrual flow, family history of dysmenorrhea, smoking, nutritional factors such as excessive caffeine intake[3]. Dysmenorrhea is also one of the factors that affect female sexual function. Hypoactive sexual desire is the most common disorder in women's sexual health[4].
There are pharmacological and non-pharmacological treatments to decrease or eliminate PD symptoms. Some non-pharmacological methods used are changes in lifestyle and eating patterns, such as reducing salt intake, consumption of animal fat, stressors, and increasing the intake of carbohydrates and complex fibers[3].
Non-pharmacological treatments are highly relevant to PD symptoms, especially for women, whom the use of certain types of drugs is contraindicated. Many of these treatments are related

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to physiotherapy[5]. Traditional Chinese Medicine has been one complementary treatment for several health problems, and acupuncture has shown effects on pain control[6].

Auriculotherapy uses needles, seeds, or crystals, with applications in specific points of the ear. The stimulation of these points transmits signals to the brain and specific organs, modulating and harmonizing their physiological functions. The pinna has reflex zones, a microsystem with the representation of all the organs and structures of the human body[7].

This study aimed to analyze the effects of auriculotherapy on pain levels and sexual function in women with PD.

## METHODS

A longitudinal, prospective, randomized controlled and blind study with a quantitative approach, carried out in a higher education institution that included 168 students, with a simple random subtraction of 118 students, which was the population studied.

The sample size was calculated using a single average formula where $n$ is the required sample size; $d$ is the margin of error of 5% ($d$=0.05); $z$ is the degree of accuracy required at a 95% confidence level. After the sample calculation, the population of origin was selected through the roster of the 2nd to the 8th period. One hundred and sixty-eight students were identified, and after the sample calculation, it was determined that the sample with significance was of 118 students who were selected in a simple random way, by drawing their roster numbers placed in a box.

The selected participants signed the Free and Informed Consent Term (FICT). They answered the sociodemographic questionnaire (SQ), which was designed by the authors according to the characteristics of the PD, following the PD Guideline, with 20 questions that addressed the following aspects: course; period; profession; ethnicity; menstrual period, regular between 27 and 32 days; three to eight days of menstruation; pain two days before menstruation and three days after, the disappearance of pain, decrease or continuation; the presence of pain during menstruation in other body regions two days before or after.

Symptoms present during menstruation; family history of menstrual cramps; use of some contraceptive method; missing work or college classes during menstruation; regular physical exercise; currently practiced exercises; use of pharmacological treatment; history of abdominal or pelvic surgery or any therapy; history of diseases such as endometriosis, fibroma or other pelvic diseases; history of childbirth or abortion; any other disease that caused pain; smoking and needle phobia.

The volunteers were evaluated regarding their sexual function by the female sexual function index (FSFI), which contains the domains sexual desire, sexual arousal, lubrication, orgasm, satisfaction, and pain, in a total of 19 questions. The level of pain was assessed using the visual analog scale (VAS), which describes the pain as mild, moderate, and severe, ranging from zero to 10.

The inclusion criteria were age between 18 and 25 years, with a probable diagnosis of PD and regular menstrual cycle between 27 and 32 days, sedentary, non-smokers, without pharmacological or physiotherapeutic treatment, attending the 2nd to the 8th period of the course.

The exclusion criteria were the presence of secondary dysmenorrhea, diseases that cause pain, pregnancy, or childbirth history, use of psychotropic drugs and hormonal contraception in the last six months, history of heart disease, needle phobia. Those who did not sign the FICT and did not complete the SQ or had a zero or blank response in the FSFI, which may mean inactive or not initiated sexual life, were excluded.

After the evaluation by the inclusion and exclusion criteria, 21 volunteers were included, randomly divided into control and experimental groups A, and control and experimental groups B, totaling four groups. After simple randomization, control groups A, B, and experimental B were left with five participants each, and control B with six.

Two different protocols were created. The first included the auricular points. Sympathetic: Kidney: *Shen Men* "door of the soul": ovary: uterus: endocrine. The second intervention protocol had the same points already described, except for the sympathetic point that was replaced by the liver point. The protocols were also randomly separated into groups. The first protocol containing the sympathetic point and the other points was assigned to the control A and experimental A groups, and the second protocol containing the liver point to the control B and experimental B groups. The applications lasted two months and three weeks, two times per week, 20 minutes each application, totaling 22 interventions during three menstrual cycles.

Auricular evaluation and inspection were performed with the participants in the sitting position, asepsis of the ear that would receive the intervention using cotton with 70% alcohol. Then, 0.25x15mm needles were inserted in the right ear with a guide tube at the indication points, according to the protocol of each experimental group. The right ear was chosen for both protocols, as it is the one that has a liver point.

In the control groups, micropore was placed at each specific point according to the protocol, simulating the application of auriculotherapy. At the end of the 22 applications, the FSFI and VAS questionnaires, used in the pre-intervention, were applied again. Both questionnaires were applied on the second menstrual day of each participant at the beginning and end of the study.

Two researchers performed the interventions, each was responsible for two groups from the beginning to the end of this study, always following the same order of allocation of the participants and schedules, as well as the placement of the needles in the auricular points.

This study respected the guidelines and criteria established in resolution 466/12 of the National Health Council (CNS), approved by the Ethics and Research Committee of the *Associação Teresinense de Ensino Sc. Ltda*., with opinion no. 2.423.373.

### Statistical analysis

The data were organized in spreadsheets in the Microsoft Office Excel 2016 and tabulated in the GraphPad Prism software. The Kolmogorov-Smirnov test was applied for statistical analysis. For the parametric data, Student's $t$-test was used, with a 95% confidence interval and significance at $p < 0.05$. Nonparametric data were analyzed using the Wilcoxon-Mann-Whitney test.

**Table 1.** Analysis of female sexual function before and after the auriculotherapy intervention

| Variables | Control – A | | | Experimental - A | | | Control – B | | | Experimental - B | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Initial Avarage±SE | Final Avarage±SE | AIG p-value | Initial Avarage±SE | Final Avarage±SE | AIG p-value | Initial Avarage±SE | Final Avarage±SE | AIG P-value | Initial Avarage±SE | Final Avarage±SE | AIG P-value | AEG p-value |
| Desire | 2.6±0.7 | 2.9±0.8 | NS | 3.5±0.4 | 3.7±0.6 | NS | 3.4±0.4 | 2.9±0.5 | NS | 3.2±0.9 | 3.2±1.0 | NS | NS |
| Arousal | 1.9±1.2 | 1.9±1.2 | NS | 1.7±1.0 | 1.6±1.0 | NS | 1.9±0.9 | 1.7±1.1 | NS | 2.0±1.2 | 1.1±1.1 | NS | NS |
| Lubrication | 1.1±0.7 | 1.1±0.7 | NS | 1.8±1.1 | 2.0±1.2 | NS | 2.0±0.9 | 1.8±1.1 | NS | 2.0±1.3 | 1.2±1.2 | NS | NS |
| Orgasm | 1.8±1.1 | 1.6±1.0 | NS | 1.5±0.9 | 1.4±0.9 | NS | 1.5±0.8 | 1.4±0.9 | NS | 2.0±1.3 | 1.4±1.4 | NS | NS |
| Satisfaction | 3.0±1.3 | 3.0±1.3 | NS | 2.0±1.1 | 2.0±1.7 | NS | 2.7±1.0 | 2.3±1.1 | NS | 2.3±1.4 | 1.0±1.0 | NS | NS |
| Pain | 2.7±1.4 | 2.6±1.1 | NS | 1.7±1.2 | 1.8±1.2 | NS | 2.6±1.8 | 1.8±1.1 | NS | 2.0±1.2 | 1.0±1.0 | NS | NS |

AIG = intergroup analysis; AEG = intragroup analysis; NS = not significant.
Source: Responsible researchers, 2018.

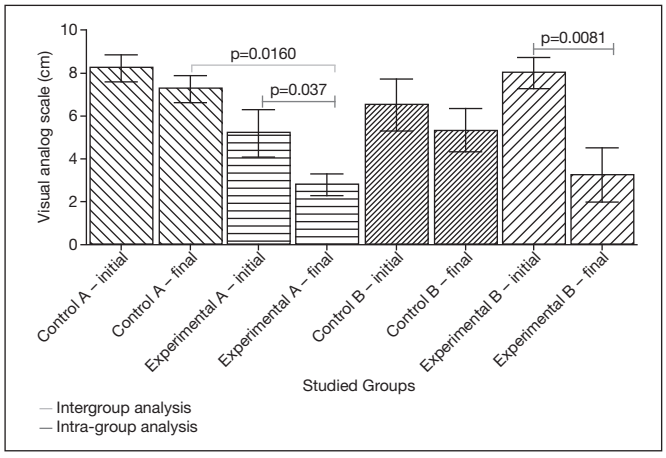


**Figure 1** Inter and intragroup analysis of the level of pain before and after the auriculotherapy intervention
Source: Responsible researchers, 2018.

## RESULTS

Figure 1 shows the results obtained regarding the intragroup and intergroup analysis of the study groups regarding pain. It was observed that the control groups A and B in the intragroup analysis did not present significant results on pain. In contrast, experimental A presented significant values referring to pain (p=0.037), and experimental B presented highly significant values with (p=0.0081). In the intergroup data, only control A and the experimental A groups showed significant values (p=0.0160).

Table 1 shows the analysis of the FSFI questionnaire, in which none of the groups presented significant results regarding sexual function both in the inter- and intragroup analysis in relation to the pre- and post-intervention.

## DISCUSSION

In this research, both auricular protocols showed significant changes for PD. Regarding the level of pain in the intragroup assessment, the liver point was more significant than the sympathetic point. In the intergroup assessment, the sympathetic point was the only one to present significance in the final assessment regarding pain levels.

Experimental research in a single group, which included 32 young women, college students, with primary dysmenorrhea, from a college in northern Taiwan, all participants received auricular acupressure to relieve menstrual pain and suffering, in the ear acupuncture points of the internal genitals organs, endocrine, *Shen Men,* sympathetic, liver and kidney. Menstrual pain was assessed using VAS. No significant differences were found for menstrual pain[8].

Another study showed that the majority of women with PD found better control of symptoms and reduced pain with the association of acupuncture with explanations about the normal menstrual cycle, self-care and diet advice, and the confidence and support provided by professionals, as women felt heard and understood, which allowed them to feel confident in implementing these lifestyle changes[9].

In scientific investigations, protocols with 12 visits, twice a week, lasting 5 to 10 minutes during each intervention, the points *Shen men*, brain stem, kidney, *Yang* of liver 1 and 2 were applied to reduce pain. When considering the extent of the effect, from the Cohen's d Index, it was possible to observe that the group with the protocol achieved the best result with a considerable reduction in pain levels, by 36%. The group without the protocol managed to achieve an average reduction of 27%. Both groups kept positive results[10-12].

A randomized controlled clinical study initially distributed 75 volunteers according to medium and high-level stress scores, and subsequently were randomly assigned to control, needle, and seed groups. The intervention groups received eight sessions at points *Shen Men*, kidney, and brain stem. The results were not statistically significant for the average level of stress both in the seed and the needle group. However, for the high level of stress, the results showed a significant change (p<0.05) right after the first session, improving at each assessment[13].

A survey involving 133 health professionals with anxiety and pain allocated the subjects to control, seed, needle, and tape groups and classified as moderate and high levels of anxiety. The protocol used was the beta version of the Auricular Protocol for Pain and Anxiety containing the *Shen men*, tranquilizer, thala-

mus, sympathetic system, and zero points. After ten visits, the treatment with needles reduced the anxiety levels by 17%. In pain levels, the reduction was 36%. As for the other instruments, there was no difference between the times[14].

Sexuality is one of the indicators of quality of life. The sexual response is controlled by a balanced interaction between all parts of the nervous system, which may be affected by negative aspects or by physical or psychological conflicts and inhibitions[15]. The sexual cycle consists of distinct components or phases in sequence, in which each phase has its neurophysiology, with a common organ, the brain[16]. In this study, the limitations occurred due to a lack of scientific basis regarding the women's sexual function associated with the intervention method of this research, requiring further studies about sexual function with a higher number of patients.

## CONCLUSION

Auriculotherapy reduced the level of pain; however, there was no significant change in relation to the sexual function of the participants. Further studies regarding the sexual function, with a higher number of patients, are necessary.

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