

Physiotherapy in primary dysmenorrhea: literature review*

Fisioterapia na dismenorrea primária: revisão de literatura

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ABSTRACT

BACKGROUND AND OBJECTIVES: Dysmenorrhea is a word derived from the Greek language and means difficult menstrual cycle. It may be classified as primary, leading to poorer quality of life indices of several women. This study aimed at investigating, by means of literature review, the efficacy and accuracy of existing therapies for primary dysmenorrhea, specifically in Physiotherapy.

CONTENTS: Narrative literature review by querying electronic databases Medline, Scielo, Lilacs, Cochrane library, PEDro and Pubmed), where articles were selected and analyzed from August 2013 to February 2014. For data collection, materials from 2005 to current literature were included using the following keywords: “dysmenorrhea”, “physiotherapy” and their Portuguese equivalent “*dismenorrea*” and “*fisioterapia*”, combining them with the operators AND and OR.

CONCLUSION: Studies were found describing the use of thermotherapy, cryotherapy, transcutaneous electric nerve stimulation and connective tissue massage, Pilates and acupuncture with improvement of such women’s symptoms. However, it is clear the need for studies regarding physiotherapeutic maneuvers with further methodological rigor.

Keywords: Dysmenorrhea, Physiotherapy, Woman’s health.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Dismenorrea é uma palavra derivada do grego e significa fluxo menstrual difícil. Pode ser classificada como primária, causando diminuição dos índices de qualidade de vida de muitas mulheres. O objetivo deste estudo

foi investigar, por meio de uma revisão bibliográfica, a eficácia e acurácia de tratamentos existentes para dismenorrea primária, especificamente na Fisioterapia.

CONTEÚDO: Revisão bibliográfica narrativa, por meio da busca em bases de dados eletrônicas (Medline, Scielo, Lilacs, biblioteca Cochrane, PEDro e Pubmed), com artigos selecionados e analisados durante o período de agosto de 2013 à fevereiro de 2014. Para a coleta foram incluídos materiais de 2005 até a literatura atual com os seguintes descritores: “*dysmenorrhea*”, “*physiotherapy*” e seus equivalentes em português “*dismenorrea*” e “*fisioterapia*” combinando-os com os operadores “AND” e “OR”.

CONCLUSÃO: Encontraram-se trabalhos que descreveram a utilização dos recursos da termoterapia, crioterapia, eletroestimulação elétrica neural transcutânea e massagem do tecido conjuntivo, Pilates e acupuntura, com resultados que apresentam melhoras na sintomatologia dessas mulheres. No entanto, torna-se evidente a necessidade do desenvolvimento de estudos referentes às manobras fisioterapêuticas com maior rigor metodológico.

Descritores: Dismenorrea, Fisioterapia, Saúde da mulher.

INTRODUCTION

Menstruation is a periodic and temporary genital bleeding, lasting from menarche to menopause¹. In addition, it is characteristic of primates and is defined as cyclic uterine hemorrhage dependent on endometrial disintegration and exfoliation, which occurs approximately in a normal cycle of 21 to 45 days, with 2 to 6 days of flow and mean blood loss of 20 to 60mL, in general lasting 40 years².

Dysmenorrhea, on the other hand, is pelvic or lower abdominal cyclic or recurrent pain, associated to menstruation. It is the most common gynecological complaint among young women, with prevalence between 43 and 93%³. According to symptoms intensity, it is also major cause for school or work absenteeism⁴. The word dysmenorrhea comes from the Greek language and means difficult menstrual flow, being one of the most frequent gynecological affections with higher or lower intensity during menstrual cycle⁵.

According to its clinical presentation, primary dysmenorrhea (PD) is characterized by lack of visible structural abnormality or any gynecological pelvic disease and is the most commonly diagnosed type among teenagers³. Functional dysmenorrhea coincides with the onset of regular ovulation cycles, which is more frequent approximately two years after menarche³. Major symptom is lower abdominal or lumbar region pain, followed by other symptoms such as nausea, vomiting, headache and diar-

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rhea⁶. Pain may decrease after puerperal gravid cycle and, due to this, it is suggested that in such patients uterine isthmus is hypertonic, resulting in temporary retention of menstrual flow residues (which causes pressure in this highly innervated area). Approximately 50 to 70% of women have dysmenorrhea symptoms in some moment of life, being that approximately 10% become unable to perform their routine activities³.

Many therapies are proposed for dysmenorrhea and include the use of non-steroid anti-inflammatory drugs (NSAIDs), oral contraceptives, vitamins and tocolytic agents¹. A different treatment option is the practice of physical activities, for improving pelvic and extra-pelvic organs functioning by adjusting metabolism, hydroelectrolytic balance, hemodynamic conditions and blood flow, thus promoting a phenomenon known as analgesia by physical exercise which, by means of endogenous mechanisms and endogenous opioids release, raises pain threshold^{7,8}.

Physiotherapy has a diversity of therapeutic resources aiming at decreasing or eliminating pain in a practical and economic way, and may even undo negative associations surrounding this period, promoting better quality of life⁹ by means of some analgesic modalities, such as therapeutic exercises (kinesiotherapy), electrotherapy and therapeutic massage¹⁰.

In light of the above, this study aimed at investigating, by means of literature review, the efficacy and accuracy of existing therapies for PD, specifically in physiotherapy.

CONTENTS

A narrative literature review was carried out, where studies were identified by querying electronic databases Medline, Scielo, Lilacs, Cochrane, PEDro and Pubmed from August 2013 to Feb-

ruary 2014. Materials from 2005 until what is presented by current literature were selected for analysis.

Articles were located using the following terms: “dysmenorrhea”, “physiotherapy”, and their Portuguese equivalents “*dismenorreia*” and “*fisioterapia*”, combining with operators “AND” and “OR”. Inclusion criteria were: (1) articles with complete text; (2) written in Portuguese or in English; (3) published between 2005 and 2014; (4) addressing physiotherapy and/or other complementary therapies to treat dysmenorrhea. There have been no restrictions to the sample to maximize study results. Excluded from the study were: (1) monographs; (2) review articles; (3) events proceedings; (4) dissertations and theses; (5) pharmacological studies or those addressing just this aspect in dysmenorrhea; (6) studies addressing secondary dysmenorrhea; (7) studies outside the studied period and (8) animal studies.

The search has resulted in 210 articles (189 in Pubmed, 7 in Cochrane, 4 in Scielo, 10 in Lilacs, zero in PEDro, zero in Medline). After reading them, 186 articles were excluded for not contemplating the stipulated period or the proposed subject and 10 were repeated articles, remaining 15 articles, the major results of which are shown in table 1.

In general, the review carried out by the practice of Traditional Chinese Medicine (TCM) therapy, acupressure and acupuncture, has shown improvement in dysmenorrhea pain symptoms. Remaining resources, such as connective tissue massage, abdominal meridian (Hyongrak) massage, transcutaneous electric nerve stimulation (TENS), Pilates and belly dance, have shown how effective they are for dysmenorrhea patients’ pain.

Table 1. Description of selected texts

Authors	Types of study and n	Objectives	Results	Conclusion
Kim, Jo e Hwang ¹¹	Case controlled. 85 women (42 experimental and 43 control)	To examine the effects of massage in the abdominal meridian (Kyongrak) on dysmenorrhea.	Menstrual cramps symptoms in the experimental group were significantly lower after abdominal meridian massage as compared to control group (p<0.001)	Massage on abdominal meridian (Kyongrak) was effective to relieve menstrual cramps. It is suggested that the technique might be an alternative to treat dysmenorrhea.
Schiötz, Jettstad & Al-Heeti ¹²	Prospective. 21 women	To observe the effects of high frequency TENS on dysmenorrhea.	There has been decrease in mean pain score in women treated with TENS (p=0.0009). Simultaneous use of analgesic tablets was also significantly decreased (p=0.03) and 7 women stopped using analgesics during the use of the device (p=0.02). There have been no adverse effects. After 6 to 8 months, 14 women were regularly using the device.	TENS is an alternative to treat dysmenorrhea.
Tugay et al. ¹³	Prospective, randomized, controlled. 34 women	To compare the effectiveness of TENS and interferential current on PD soon after application, 8 and 24 hours later.	Intensity of evaluated parameters (menstrual pain, referred pain in lower limbs and low back pain) were decreased soon after applications in both groups (TENS and interferential) (p<0.05). One may say that there has been no superiority between methods (p>0.05)	Both TENS and interferential current seem to be effective to treat PD.

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Table 1. Description of selected texts - continuation

Guo & Meng ¹⁴	Case controlled. 60 women divided in 30 control group and 30 treatment.	To observe therapeutic effects of acupuncture combined with Tuiná (TUI-NÁ) on PD symptoms.	From 30 treatment group cases, 17 were cured, 11 have improved and 2 have failed, with total effective rate of 93.3%. From 30 control group cases, 9 were cured, 13 have improved and 8 have failed, with total effective rate of 73.3%. Comparison of both groups total effective rate has shown significant difference ($\chi^2=4.32$, $p<0.05$), suggesting that therapeutic effect on treatment group was superior as compared to control group.	Acupuncture combined with Tuiná (TUI-NÁ) has good perspectives to treat PB.
Witt et al. ¹⁵	Randomized, clinical trial plus non-randomized cohort. 649 women being 201 randomized.	To investigate clinical effectiveness and cost-effectiveness rate of acupuncture in dysmenorrhea patients.	Three months later, mean pain intensity was lower with acupuncture as compared to control group. Acupuncture group had better QL and higher cost.	Acupuncture in dysmenorrhea patients was associated to better QL as compared to control group.
Araújo, Leitão & Ventura ¹⁶	Transversal. 20 women	To compare cryotherapy and thermotherapy to control PD pain.	Pain intensity was significantly lower in the group treated with cryotherapy. Patients submitted to treatment with cold had higher satisfaction as compared to those treated with heat.	In PD patients, cryotherapy was more effective than heat to decrease pain intensity.
Bazarganipour et al. ¹⁷	Double blind, randomized. 194 women	To examine whether the application of a simple acupuncture protocol to the Taichong point is effective to relieve dysmenorrhea pain.	The difference in dysmenorrhea severity between groups was not significant in the first cycle, but was significant in the fourth cycle ($U=2377.00$, $p<0.001$), and it has significantly decreased in the study group ($p<0.05$).	The application of a simple pressure protocol for acupoint Taichong is an effective and low cost way to decrease intensity of dysmenorrhea symptoms.
Lin et al. ¹⁸	Case report. 1 woman	Describes the observation of painful dysmenorrhea and its associated symptoms relief in a PD patient after treatment with CMAT.	CMAT was performed once in the second day of the first (partial treatment) and fourth menstrual cycle (complete treatment). Pain was immediately resolved after partial CMAT treatment during the first menstrual cycle, but has reappeared 20 minutes later. Satisfactory results were obtained during the fourth menstrual cycle after complete CMAT treatment, which was also forwarded to the next session (fifth menstrual period). However, dysmenorrhea symptoms have recurred 2 months after treatment (sixth menstrual period).	This case report indicates that CMAT treatment may be effective to relieve dysmenorrhea-associated symptoms. The transition effect could suggest that there is potential to produce a long-lasting effect for dysmenorrhea.
Reis, Hardy & Sousa ¹⁹	Pilot, observational and cohort study. 75 women.	To evaluate the effects of connective tissue massage as therapeutic non-pharmacological proposal for PD.	Pain score has significantly decreased after the first month of treatment. Percentage of volunteers needing painkillers and reporting systemic symptoms has decreased along treatment, but there has been no correlation between the number of massages and pain scores in the multivariate analysis.	Connective tissue massage may decrease menstrual pain, but the type of study does not allow ruling out placebo effect. Results justify a randomized clinical trial to confirm or not such effect.
Yu et al. ²⁰	Clinical, prospective and randomized. 60 patients.	To compare immediate effect of acupuncture of Sanyinjiao point (SP6) on blood flow of the uterine artery in PD to the Xuanzhong point (GB39).	There have been significant decrease in menstrual pain scores, pulsatility index, resistance index and systolic and diastolic peak ratio in the SP6 treatment group five minutes after treatment. As compared to control group GB39, SP6 treatment group patients had significant decrease in changes in menstrual pain scores, pulsatility index, resistance index and systolic and diastolic peak ratio five minutes after treatment. There have been no significant changes in menstrual pain scores, pulsatility index, resistance index and systolic and diastolic peak ratio before and after treatment in the GB39 control group ($p>0.05$).	This study suggests that needling at SP6 may immediately improve uterine arterial blood flow in PD patients, while GB39 does not have such effects.

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Table 1. Description of selected texts - continuation

Liu et al. ²¹	Randomized study. 194 women with PD	To evaluate the effectiveness of a single acupuncture point to treat PD as compared to placebo acupuncture and no acupuncture. Acupoint group (n=50), unrelated acupoint group (n=50), placebo group (n=46), no acupuncture group (n=48).	Primary outcome, primary VAS scores comparison with regard to treatment used has shown that patients receiving acupuncture, those of unrelated acupoint group and of the placebo group have shown significant improvements as compared to the group receiving no acupuncture. There have been no significant differences among four groups with regard to secondary outcomes.	Acupuncture was beneficial to relieve dysmenorrhea pain as compared to the group with no acupuncture; however, and significantly, there have been no differences among acupoint group, unrelated acupoint group and placebo group.
Mirbagher-Ajorpaz, Adib-Hajbaghery & Mosaebi ²²	Controlled, randomized. 30 young students	To evaluate the effect of acupressure on SP6 point on PD.	Acupressure was applied to point SP6 in the treatment group and a mild touch at acupoint SP6 was applied to control group. There have been significant differences in dysmenorrhea scores between groups immediately after and also 3 hours after treatment.	Acupressure on meridian SP6 might be a non-invasive nursing intervention to relieve PD and its effects last for 3 hours after treatment.
Araújo et al. ²³	Descriptive, experimental, with longitudinal characteristic and quantitative approach. 10 women.	To compare pain in PD women before and after being submitted to the Pilates method.	Menstrual pain before treatment was 7.89±1.96 and after treatment 2.56±0.56 with p<0.001, showing significant difference before and after Pilates method treatment. In evaluating pain with McGill Pain questionnaire, there has been significant decrease in all components when comparing values before and after treatment: sensory (p<0.001), affective (p<0.05), evaluative (p<0.001) and miscellaneous (p<0.001).	Pilates method as physical activity practice has improved PD-associated symptoms, decreasing patients' pain, and might be a promising non-pharmacological alternative.
Nascimento ²⁴	Descriptive, quasi-experimental with quantitative approach. 8 beginner belly dance learners.	To evaluate therapeutic effect of belly dance in women with complaints suggestive of PD.	With regard to PD complaints, VAS has recorded significant decrease. At the end of the fifth evaluation, it was observed that belly dance has therapeutic effect to decrease PD complaints.	Belly dance had positive effects on decreasing menstrual cramps, being a non-pharmacological option for these women.
Yeh et al. ²⁵	Simple, blind, placebo controlled. 113 participants	To evaluate the effects of auricular acupuncture on menstrual pain and distress on teenagers with dysmenorrhea.	Differences between groups were found in VAS and MDQ after interventions. Differences within group were found in changes of VAS, SF-MPQ and MDQ scores during interventions for both groups.	Auricular acupuncture relieves teenagers' menstrual pain and distress and may be a basis for the use of auricular acupuncture to treat dysmenorrhea. There has been pain decrease with placebo as well as with the real acupuncture point, but the latter was significantly better. Placebo acupuncture point cannot be used as control for auricular acupuncture point and for qualitative evaluation of dysmenorrhea.

TENS: transcutaneous electric nerve stimulation; QL: quality of life; PD: primary dysmenorrhea; CMAT: collateral meridian acupressure therapy; SF-MPQ: Short-Form McGill Pain Questionnaire; MDQ: Menstrual Distress Questionnaire.

Currently, in gynecology, studies have discussed therapeutic ways to minimize discomfort, especially in case of primary dysmenorrhea, however, when it comes to treatment, analgesics are the first line to manage primary dysmenorrhea²⁶. They act by decreasing cyclooxygenase pathway activity, inhibiting prostaglandin synthesis. There are studies showing that NSAIDs improve

17 to 95% of women's complaints, being their gastrointestinal side-effects in general tolerable, but should be avoided in women with risk to developing ulcer²⁷. However, currently NSAIDs only last during pain crisis, providing immediate pain relief with palliative and emergency connotation, thus crisis may be repeated at every menstruation²⁸.

However, some women cannot make use of this conventional therapy and others do not respond (10 to 20%)²⁹. Added to this, Brazilian women self-medicate, using homemade or pharmacological practices, following prescription of unqualified people, such as neighbors, friends or even written, spoken or broadcasted media³⁰, which may generate a public health problem.

However, other therapies may be used or be associated to drugs, such as Physiotherapy, which is showing satisfactory results among women with this disorder. There are physiotherapeutic resources to decrease severity of primary dysmenorrhea symptoms or even to eliminate pain. Among them, there are: thermotherapy and cryotherapy; abdominal meridian (Kyongrak) massage; kinesiotherapy; connective tissue massage (CTM); TENS; interferential current; acupuncture; acupressure; collateral meridian acupressure therapy (CMAT); Pilates and auricular acupuncture.

Pilates has been effective for primary dysmenorrhea, as shown by a study by Araujo et al.²³ with 10 women aged between 18 and 30 years, submitted to the protocol of 16 exercises based on the Pilates method, with ball and on the ground, aimed at the pelvic region. Authors have observed significant decrease in pain intensity reported by participants due to increased blood flow, correction of muscle and postural imbalances and recovery of body and mind vitality³¹.

Thermotherapy was also other recurrent treatment for this disorder. Cold and heat are resources able to decrease or eliminate pain in a practical and economic way, through physiological effects they may produce in the organism when directly applied to the body¹⁶. The speed of the effect of cold on pain suggests that lower temperature may act as another sensory stimulation on pain behavior mechanism, and since cold stimulations are very intense, they may lead to endorphins and encephalins release. As skin temperature lowers, stimulation to produce heat intensifies the mechanism³¹.

TENS is one of the simplest electrotherapy modalities, being a valuable physical resource to relieve pain induced both by acute and chronic injuries³². This is an alternative, noninvasive, non-toxic method with the major advantage of not having side-effects³³. Oliveira et al.³⁴ have evaluated high and low frequency TENS effect in women with moderate to severe primary dysmenorrhea. Menstrual pain was measured by the Numeric Rating Scale (NRS), varying from zero to 10, before and soon after the intervention in all groups. At initial evaluation, groups were homogeneous, without significant pain score difference ($p=0.875$). Intragroup analysis of NRS scale data before and after TENS, has shown that high frequency TENS (HFT) and low frequency TENS (LFT) groups had significant difference ($p=0.038$; $p=0.008$). However the TENS placebo (TP) group had no difference ($p=0.346$). Intergroup analysis has not found significant difference among groups when comparing the first and the second evaluation ($p=0.267$). So, HFT and LFT were effective to relieve pain, being easy to apply, comfortable and with no adverse effects.

Therapeutic proposals which are being increasingly used by qualified professional derive from TCM, such as acupunc-

ture, acupressure and auricular acupuncture. Studies^{21,25} have shown improved pain in women suffering from primary dysmenorrhea. The study by Yu et al.²⁰ reports that immediate acupuncture effect on Sanyinjiao point (SP6) provides immediate menstrual flow improvement. A study by Mirbagher-Ajorpez, Adib-Hajbaghery & Mosaebi²², using a different theory (acupressure at point SP6), has also observed positive pain improvement results.

Another aspect to manage this disease, belly dance, has shown to be positive to relieve pain. This is possibly related to the similarity with kinesiotherapy exercises such as: pelvic anterior and posterior tilt, forward and backward rotations, lateral tilts, pelvic elevation and depression, in addition to stretching and breathing exercises. Such exercises massage internal organs, thus improving blood circulation and metabolism regulation leading to improved health and benefiting legs and internal organs²⁴.

One should also mention connective tissue massage, which suggests menstrual pain decrease because it is a spontaneous stimulation aiming at activating connective tissue mechanical receptors. This stimulation is transmitted by sensory nerves by means of spinal cord sympathetic ganglia and acts by releasing opioids such as enkephalin in the spinal cord posterior nerve root, inhibiting pain transmission by thin fibers¹⁹.

CONCLUSION

Our findings indicate that Physiotherapy may be indicated to treat women with primary dysmenorrhea for being a low cost and noninvasive alternative. For such, there are several therapeutic resources, such as thermotherapy, cryotherapy, kinesiotherapy, TENS and connective tissue massage, acupuncture and Pilates, among others. Reviewed studies show satisfactory results of physiotherapeutic interventions, although the due methodological rigor is not always present, pointing to the need of further research in the area.

The number of publications on physiotherapeutic techniques is still small, so it is clear the need to develop quantitative, qualitative, randomized and controlled studies with higher methodological rigor with regard to physiotherapeutic maneuvers.

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