

## Acupuncture in the induction of labor in full-term pregnant women without associated pathology

La acupuntura en la inducción del parto en gestantes a término sin patología asociada

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### ABSTRACT

**Introduction:** In recent years, in several gynecologic-obstetric hospitals throughout the country, the effect of acupuncture in stimulating labor in pregnant women at term has been evidenced.

**Objective:** To evaluate the effectiveness of acupuncture in the induction of labor in term pregnant women without associated pathology.

**Method:** Cross-sectional descriptive observational study, in the period January 2018 to January 2020, of full-term pregnant women without associated pathology to whom the acupuncture method was applied for the induction of labor at the Provincial Gynecologic-obstetric Teaching Hospital José Ramón López Tabrane, from Matanzas.

**Results:** A higher frequency of patients in the age group of 20-24 years, primiparas, who required an acupuncture session, with contractile response in the period of up to 12 hours; labor of up to six hours, eutocic delivery and without induction was identified; with oxytocin; in some age groups, the risk of adverse events, instrumental delivery and perinatal asphyxia was increased; contractile response in 21-36 hours increased the risk of cesarean section, induction, bleeding and maternal sepsis.



**Conclusions:** The results of the application of acupuncture are satisfactory; the contractile response variable should be followed up in the period of 21-36 hours; it is necessary to continue delving into the research topic.

**Key words:** induction of labor; acupuncture.

## RESUMEN

**Introducción:** En los últimos años, en varios hospitales ginecobstétricos de Cuba, se ha evidenciado el efecto de la acupuntura en la estimulación del trabajo de parto en gestantes a término.

**Objetivo:** Evaluar la efectividad de la acupuntura en la inducción del trabajo de parto en gestantes a término sin patología asociada.

**Método:** Se realizó un estudio observacional descriptivo de corte transversal, en las gestantes a término sin patología asociada, a quienes se le aplicó el método acupuntural para la inducción del trabajo de parto, en Hospital Provincial Ginecobstétrico Docente José Ramón López Tabrane, de Matanzas, en el período comprendido de enero de 2018 a enero de 2020.

**Resultados:** Se identificó mayor frecuencia de pacientes del grupo etario de 20-24 años, primíparas, que requirieron una sesión de acupuntura, con respuesta contráctil en el período de hasta 12 horas, trabajo de parto de hasta seis horas, parto eutócico y sin inducción con oxitocina. En algunos grupos etarios se incrementó el riesgo de eventos adversos, parto instrumentado y asfixia perinatal. La respuesta contráctil en 21 a 36 horas incrementó el riesgo de cesárea, inducción, sangramiento y sepsis materna.

**Conclusiones:** Los resultados de la aplicación de la acupuntura son satisfactorios. Se debe dar seguimiento a la variable respuesta contráctil en el período de 21 a 36 horas, y continuar ahondando en el tema de investigación.

**Palabras clave:** inducción del trabajo de parto; acupuntura.

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## INTRODUCTION

The obstetric conduct during pregnancy has been analyzed in multiple studies during the last years; nevertheless, it continues to be controversial. The induction of labor,



whatever the cause, is related with an increase of cesarean births, besides inductions are associated with an increment of the complications in comparison to spontaneous labor and this can simply be due to that the uterus is less prepared for labor. The examples are an immature cervix or a myometrium unable to achieve effective synchronized contractions<sup>(1)</sup>. Induction is indicated when the benefits for the mother and the fetus exceed those of continuing the pregnancy. Among the common indications are the premature rupture of membranes without spontaneous labor beginning, maternal hypertension, commitment of fetal well-being and prolonged pregnancy<sup>(1,2)</sup>.

A quantifiable method to predict a successful labor induction is the one described by Bishop which includes the cervix length, consistency of the cervix, dilatation, cervix position and the degree of descent of the presentation. Induction of active labor is usually successful with a score greater than 7<sup>(3-5)</sup>. This has constituted a challenge for the obstetrics; through the years different methods have been used that extend from the artificial rupture of ovular membranes and their detachment, use of vaginal douches, enemas, use of intra-amniotic solutions, prostaglandins, intravenous oxytocin infusion and more recently the use of acupuncture<sup>(1,5)</sup>.

Natural and traditional medicine currently prefers to call it bioenergetic medicine, essentially based on Asian natural medicine, which includes two large therapeutic fields: external medicine and internal medicine. The selection of the technique to be used depends only on the patient's clinic<sup>(6)</sup>. Acupuncture is an almost harmless, economic therapeutic method when applied correctly. It doesn't require medications, is of easy application and is effective in those patients for whom the pain is a fundamental symptom, and also in psychosomatic disorders that are associated by psychological factors. The clinical practice has also demonstrated satisfactory results in the treatment of symptoms, illnesses and health problems that appear in the index and therapeutic forms of other specialties<sup>(7-9)</sup>.

The essence of this technique takes as starting point a concept of health that is more than the absence of the disease: the balance state among the different body elements, as well as the environment; therefore, this kind of medicine makes emphasis in the prevention that implies the maintenance of this balance state and when there is a rupture, the application of different techniques should have as objective its recovery by means of the stimulation or activity of the mechanisms of the own body more than the war against the agents producing imbalance<sup>(10)</sup>.

For the best understanding and application of this bioenergetic technique, the knowledge provided by the basic science are of great help, above all, surface anatomy, especially the external of the human body which serves as reference to locate the acupuncture points as well as vessels and nerves close to the points so as not damaging them when applying the different techniques<sup>(10,11)</sup>.

The formation and development of Acupuncture is a long historical process. It was introduced in Europe in the XVII century. But it was not known in the American continent until the middle of the XX century. Mexico has a Society of Acupuncturists. In Nicaragua acupuncture was practiced for the first time for a Cuban doctor and from that moment its application started in that country. Argentina was the first country in the American continent to know acupuncture in 1948 by Rebuelto<sup>(10,11)</sup>.



During the 70s acupuncture was already practiced in several institutions of our country, and its application increased in the decade of the 90s during the so called Special Period to face the necessity of looking for alternative in public health to solve the lack of medications and the convenience of incorporating this therapeutic method to the Cuban medical arsenal due to its advantages. Therefore it is called alternative medicine, and eastern and western medicine can be combined on it<sup>(12)</sup>.

During last years, gynec-obstetric hospitals of the country such as the hospitals Tamara Bunke, from Santiago de Cuba; Justo León, from Pinar del Río, several hospitals of the capital such as the hospitals America Arias and Eusebio Hernández, and the hospital Comandante Manuel Fajardo from Mayabeque, have shown the effect of acupuncture in the stimulation of labor in pregnant women at term<sup>(12)</sup>.

In the Gynec-obstetric Teaching Hospital of Matanzas, several researches have been carried out with regard to the use of acupuncture as stimulant of the beginning of labor and to improve cervical conditions, such as the researches carried out by Molina<sup>(12)</sup>, Espinosa,<sup>(13)</sup> Suárez Cuello<sup>(14)</sup> and more recently Martell Rodríguez<sup>(15)</sup> with satisfactory results in patients at term.

From the practical point of view, for the induction of labor both acupunctural and pharmacological methods are used; originating, the last one, a high rate of caesarean sections and there is not updated information that allows to value the effectiveness of acupuncture application.

Starting from the aspects previously described, the author defines as scientific problem the following query: Which the results of acupuncture treatment are in the induction of labor in pregnant women at term without associated pathologies, in the Provincial Gynec-obstetric Teaching Hospital José Ramón López Tabrane during the period from January 2018 to January 2020?

In spite of its wide use, there are not enough researches regarding this topic. The limited observational studies carried out so far suggest that acupuncture for labor induction doesn't have known adverse effects for the fetus and it can be effective, whenever it is applied by professional experts. However, the evidence about the clinical effectiveness of this technique is limited. This research will be the first one in the institution in approaching the effectiveness of the acupuncture treatment application in labor induction in pregnant women at term without associated pathology.

With the purpose of updating information on the addressed topic and to have evidence that supports the safety and effectiveness of this alternative for onset of labor in a physiological way, this research was carried out with the objective of evaluating the effectiveness of acupuncture in the induction of labor in pregnant women at term without associated pathologies in the Provincial Gynec-obstetric Teaching Hospital José Ramón López Tabrane during the period from January 2018 to January 2020.



## METHODS

A descriptive observational cross-sectional study was carried out during the period from January 2018 to January 2020, in the Provincial Gyneco-obstetric Teaching Hospital José Ramón López Tabrane in pregnant women at term without added pathology, to who acupuncture method was applied for labor induction.

The universe was made up of pregnant women over 19 years of age, at term and without added pathology to whom acupuncture method was applied in the aforementioned hospital in the studied period.

Inclusion criteria:

- Pregnant women over 19 years of age, without added pathology.
- Patient with satisfactory results of fetal well-being tests.

Exclusion criteria:

- Patient with previous adverse reactions to acupuncture.
- Patient with dermatological lesions in the puncture area.
- Other situations that contraindicate labor induction by acupuncture.
- Patient that didn't give their consent to be part of the research.

Based on the set forth a criterion, the study population was 157 pregnant women in total.

Stainless needles of Chinese production were used, with 0,32mm diameter and 40mm long, previously sterilized. Prior asepsis in the puncture area with cotton and alcohol, needles were inserted perpendicularly with the tip in the direction of the pregnant uterus until the patient experienced the acupuncture sensation (tingling, cramps and currents).

Once anatomical points of references are located, VC3, VC4, VC5, VC6, E25 and E29, they were manually stimulated every 10 minutes to complete 1 hour in each session; and to get the expected result, they were applied until a maximum of 3 sessions.

The puncture order and characteristics were the following:

VC3 (1cun above the upper border of the pubis), VC4 (2cun above the pubis) and E29 (2cun outside VC3) contraction stimulators.



VC6 (1.5cun below the navel), VC5 (2cun below the navel) and E25 (2cun on the outside the navel) also uterine contractions stimulators and they help to the cervical ripening.

The variables to be evaluated were:

Parity: number of births after 20 weeks of gestation.

Contractile response: time it takes for uterine contractions to appear:

<12 hours: effective.

13-20: moderately effective.

21-36: not very effective.

>36: not effective.

Type of adverse event: as reported by the patient or nurse.

Duration of labor: time elapsed from the beginning of the dilation period until the expulsion of the product of conception

Type of delivery: way in which birth occurs.

Maternal and neonatal complications: complications during labor, immediate puerperium and at birth.

Induction: patients who, despite the use of acupuncture, require induction with oxytocin.

Taking into account the characteristics of the variables and the defined objectives, absolute and relative frequencies, and measures of descriptive statistic were used (geometric mean, standard deviation, asymmetric and kurtosis coefficient).

Bivariate Chi-square analysis was performed to identify the existence of significant statistical association between the variable number of acupuncture sessions and time of contractile response with the considered variables of results.

The study was conducted according to Cuban Good Clinical Practices and the Declaration of Helsinki in its 2000 year version, and it had the approval of the Scientific Council of the Provincial Gyneco-obstetric Teaching Hospital José Ramón López Tabrane and the corresponding Medical Ethics Commission. The acupuncture procedure and the objective of the research were explained to the patients, and their informed consent was requested.

The researcher guaranteed that the study didn't imply risk for the health of the patients, and that results were only used with scientific purposes.



## RESULTS

Chart 1 shows the number of births that the pregnant women in the sample have had, where it can be seen that the 60.51% of patients that received acupuncture were primiparas. 11.46% had had 3 or more pregnancies at term.

**Chart 1.** Parity of pregnant women to who acupuncture was applied

Parity	Absolute frequency	Relative frequency (%)
Primipara	95	60.51
Secundipara	44	28.03
≥Tercipara	18	11.46
Total	157	100.00

The analysis of the behavior of the contractile response, according to the number of acupuncture sessions, as seen in chart 2, showed that in 132 patients (84.08%) it was inferior or similar to 12 hours; 81 of them (51.59% of the total) received only a session; 30 (19.11%) received two sessions and 21 (13.38%) three sessions. In 16 cases (10.19%) the contractile response took place within the 13-20 hours. Ten of them (6.37%) received a session, two (1.27%) 2 sessions and four (2.55%) 3 sessions.

In 7 cases the response was in a period within 21-36 hours, most of the cases with three sessions. Only 2 patients (1.27%) had response after 36 hours; with 2 and 3 sessions respectively.

59.24% needed only a session, 21.66% two and 19.11% three sessions.



**Chart 2.** Behavior of the contractile response according to acupuncture sessions

Contractil Response (hours)	Acupuncture sessions						Total	
	1		2		3			
	f	rf (%)	f	rf (%)	f	rf (%)	f	rf (%)
≤ 12	81	51.59	30	19.11	21	13.38	132	84.08
13-20	10	6.37	2	1.27	4	2.55	16	10.19
21-36	2	1.27	1	0.64	4	2.55	7	4.46
>36	0	0.00	1	0.64	1	0.64	2	1.27
Total	93	59.24	34	21.66	30	19.11	157	100.00

f=for Absolute frequency; rf (%)=for Relative frequency (%).

There were four adverse events (chart 3), none of them with severe neither serious intensity. Only 15 patients (9.55%) developed adverse events, the most frequent were pain in the puncture place (5.10%) and hyperemia (3.18%). In 15 cases (7.64%) the intensity was mild and in 3 (1.91%) moderate.

**Chart 3.** Adverse events caused by acupuncture and intensity

Adverse events	Intensity				Total	
	Mild		Moderate			
	f	rf (%)	f	rf (%)	f	rf (%)
Pain in puncture place	8	5.10	0	0.00	8	5.10
Hyperemia	3	1.91	2	1.27	5	3.18
Dry mouth	0	0.00	1	0.64	1	0.64
Increased sweating	1	0.64	0	0.00	1	0.64
Total	12	7.64	3	1.91	15	9.55

f=for Absolute frequency; rf (%)=for Relative frequency (%).

Chart 4 shows that the results obtained showed higher frequency of patient with labor duration shorter or similar to 6 hours (47.77) and only 1 exceeded 24 hours.





**Chart 4.** Duration of labor in patient with acupuncture

Duration of labor (hours)	Absolute frequency	Relative frequency (%)
≤ 6	75	47.77
7-12	58	36.94
13-18	16	10.19
19-24	7	4.46
> 24	1	0.64
Total	157	100.00

The chart 5 shows that in 128 cases (81.53%), childbirth was eutocic, 6 (3.82%) needed instrumental delivery and 23 (14.65%) caesarean operation. According to birth type, 111 patients didn't need induction with eutocic, 4 with instrumental delivery and in 10 cases caesarean operation was carried out.

**Chart 5.** Birth type and induction requirement

Type of birth	Induction				Total	
	Yes		No			
	f	rf (%)	f	rf (%)	f	rf (%)
Eutocic	17	10.83	111	70.70	128	81.53
Instrumental	2	1.27	4	2.55	6	3.82
Caesarean	13	8.28	10	6.37	23	14.65
Total	32	20.38	125	79.62	157	100.00

f=for Absolute frequency; rf (%)=for Relative frequency (%).

There was higher frequency of mother and newborn without complications, as shown in table 6, 88.54% and 93.63% respectively. Among mother complications, the most frequent was tearing 14 (8.92%), followed by bleeding and sepsis, both with 2 (1.27%). Among the newborn complications, 6 (3.82%) had moderate depression at birth, 2 (1.27%) perinatal asphyxia and 1 (0.64%) newborn had aspiration of meconium amniotic fluid and breathing distress.



**Chart 6.** Mothers and newborn complications in patients with acupuncture

Complications		f	rf (%)
Mothers	Bleeding	2	1.27
	Sepsis	2	1.27
	Tearing	14	8.92
	Without complications	139	88.54
Newborns	Perinatal asphyxia	2	1.27
	Moderate depression at birth	6	3.82
	Aspiration of meconium amniotic fluid syndrome	1	0.64
	Breathing distress	1	0.64
	Without complications	149	93.63

f=for Absolute frequency; rf (%)=for Relative frequency (%).

## DISCUSSION

In studies carried out by other authors similar results to these ones were shown<sup>(16)</sup>, where the higher percent of patients ended pregnancy with an eutocic vaginal delivery with only one case with necessity of instrumental delivery.

In the revised bibliography, it can be appreciated that the number of sessions and the stimulated points differ from one study to another. It also differs the procedure used, and that the sample size was lower and the number of sessions higher. In spite of that, in a general way, the frequency of vaginal birth was higher. This agrees with the current research.

Regarding the use of the acupuncture for the induction of labor, Lopes<sup>(17)</sup> referred the existence of a high variability in relation to the size of the studied samples and to the number of applied sessions, aspects which coincide with that stated by Alvarez et al.<sup>(18)</sup>, Gil Rouquier and Jiménez Siles<sup>(4)</sup>.

The results obtained in the current research coincide with the information stated above.

Starting from these results the authors considered as affirmative the hypothesis that acupuncture diminishes the necessity of oxytocin during that period.

The authors concluded that acupuncture can be a good alternative or complement to pharmacological methods in the effort to facilitate childbirth and to provide a normal childbirth to the pregnant women at term<sup>(19)</sup>.



The review article published by Schlaegeret<sup>(20)</sup>, refers that acupuncture could increase the degree of cervical ripening but it doesn't reduce the quantity of oxytocin.

The results achieved in this research showed that 79.62% of patients didn't require induction, which can be considered as a positive but not conclusive result because a case-control study is required.

In this research low frequency of adverse events during the application of acupuncture, all of mild or moderate intensity was observed. Tearing and moderate depression at birth were the mother and newborn more frequent complications, but significant statistical association of these was not identified with the number of acupuncture sessions, the time of contractile response, the age and the parity. Therefore the authors consider that acupuncture is a safe procedure.

Literature highlights studies in which manual stimulation was used in patient of low risk, with 99.36% of childbirths in 24 hours and 85.35% of vaginal childbirth. Contrary to the studies published in China, most of those previously referred are focused in results and not in clinical practice.

The results obtained by Neri et al showed significant difference of induction rate between the acupuncture group and that of observation (19.6% vs. 38%;  $p < 0.01$ ), and therefore lower continuation of pregnancy (5.3% vs. 10.1%;  $p < 0.01$ ). The speed of oxytocin infusion was lower in the acupuncture group. The authors suggested that acupuncture applied at the end of the pregnancy seems to be effective to reduce the rate of induction of labor that is carried out for prolonged pregnancy; it could also reduce oxytocin use and adverse effects derived from it<sup>(21)</sup>.

The authors concluded that induction methods of Chinese medicine, combined or not with conventional methods, are an important and effective tool in their capacity to reduce the scope of intervention during the whole process of childbirth and also to reduce the interventions of labor completion<sup>(22)</sup>.

We consider these results are important because it would involve less physical effort on the mother's part, a decrease of the labor time and a smaller socio-economic cost when avoiding the caesarean operation, its complications and to diminish the hospital stay.

It has been observed that there is diversity of criteria worldwide according to points to stimulate, number of sessions and variables analyzed in the different studies. Diversity was also observed in relation to the inclusion criteria and the sample size. According to the authors' opinion it shows the lack of a standard methodology for application and evaluation of effectiveness.

In our country several researches have been carried out regarding this topic. Hernández and Ruiz<sup>(23)</sup> stated that if the cervix is immature (Bishop with score  $\leq 6$ ), an inefficient response has been demonstrated to the inductive procedure, generating long hours of proceeding duration, high caesarean operation rates (generally with diagnostic of failed induction), as well as maternal and perinatal complications. Due to this, medical community dedicated to maternal-fetal medicine has introduced multiple



alternatives with the objective of improving the state of the cervix, such as: local and systemic estrogens, relaxin, acupuncture, homeopathy (caulophyllum) and others.

The lack of a standardized and integral focus for the evaluation of effectiveness prevailed in the indexed bibliography, with the result that most of the bibliographical revisions concludes that it is still required more quantity of high quality studies.

In the referenced bibliography it is shown that the use of acupuncture for labor stimulation is broadly accepted and although the present research had a descriptive observational character, it evidenced that acupuncture is a safe method which diminishes the risk of prolonged pregnancy and the consequences derived from it. Patients that required only one acupuncture session and the beginning of contractile response in the period up to 12 hours prevailed.

The adverse events were not significant; they were mostly mild, prevailing pain in the puncture place. There was bigger frequency of patient with labor of up to six hours, eutocic childbirth and they didn't require induction with oxytocin. In most of the cases neither maternal nor newborn complications were presented.

## REFERENCES

1. Marín Ortiz E. Inducción del parto en la semana 39 de gestación vs. manejo expectante en las mujeres mayores de 40 años [Online]. Santiago de Compostela: Universidad de Santiago de Compostela; 2022 [cited 2023/11/17]. Available from: <http://hdl.handle.net/10347/28744>
2. Gary Cunningham F, Leveno KJ, Bloom SL, et al. Williams. Obstetricia. Cap. 26. Inducción y aumento del trabajo de parto [Online]. 25ª ed. España: Mc Graw-Hill Interamericana, S.A.; 2019 [cited 2023/11/17]. p. 503-14. Available from: <https://accessmedicina.mhmedical.com/content.aspx?bookid=1525&sectionid=100459628>
3. Anaya Herazo CA, Aguilar Estrada JA. Caracterización de gestantes que recibieron inducción del trabajo de parto con oxitocina. Hospital Ramón González Coro. 2022-2023 [Online]. La Habana: XVIII Congreso de la Sociedad Cubana de Ginecología y Obstetricia; 2023 [cited 2023/11/17]. Available from: <https://ginecobs2023.sld.cu/index.php/ginecobs/2023/paper/viewFile/155/92>
4. Gil Rouquier N, Jiménez Siles S. Acupuntura como inducción del trabajo de parto. Biblioteca Lascasas [Online]. 2022 [cited 2023/11/17]; 18:e13414. Available from: <https://ciberindex.com/c/lc/e13414>
5. Briones-Rivas NA, Baus-García CA, Flores-Vega JL, et al. Sufrimiento fetal asociado al uso de oxitocina en la inducción del trabajo de parto en embarazos de término. Pol Con [Online]. 2022 [cited 2023/11/17];7(5):612-31. Available from: <https://dialnet.unirioja.es/descarga/articulo/9042701.pdf>



6. Dada J, Ronzoni S. Sex for Induction of Labor. In: Dan Farine, Tobías González P. Sex and Pregnancy: From Evidence-Based Medicine to Dr Google [Online]. Cambridge: Cambridge University Press; 2022 [cited 2023/11/17]. p. 165-72. Available from: <https://www.cambridge.org/core/books/abs/sex-and-pregnancy/sex-for-induction-of-labor/197F1CF1EF269FB3A6F51FEF69E0BC5C>
7. Jackson C, Bailey J. Potential Benefits of Acupuncture for Hypertensive Disorders in Pregnancy: A Case Series. *ConvergPts* [Online]. 2022 [cited 2023/11/17];1(2). Available from: <https://www.convergentpoints.com/article/view/16>
8. Lowe LA, Betts D. Midwifery Acupuncturists' Management of Antenatal Anxiety and Depression: Data from a Survey in Aotearoa (New Zealand). *Med Acupunct*. 2023 Apr 1;35(2):63-72. DOI: 10.1089/acu.2022.0062.
9. Jackson HJ, Reneau MG, Hande K. A Scoping Review of Measures Utilized to Assess Patient Satisfaction with Acupuncture Treatments Within Randomized Controlled Trials. *Med Acupunct*. 2022;34(5):308-15. DOI: 10.1089/acu.2022.0015.
10. Kumar N, Singh Yadav A, Verma A. Acupressure Therapy in Pregnancy. *Ind J Nur Sci* [Online]. 2023 [cited 2023/11/16];8(3):42-7. Available from: <https://innovationaljournals.com/index.php/ijns/article/view/440>
11. Rukmindar D, Pekerti F, Sirvel R, et al. The Role of Self-Care Acupressure in Maternal Health Problems to Support the Sustainable Development Goals Program in the Health Sector: A Narrative Review. *Med Acupunct* [Online]. 2023 [cited 2023/11/16];35(4):170-9. Available from: <https://pubmed.ncbi.nlm.nih.gov/37609550/>
12. Molina Guerra C. Estimulación del trabajo de parto con el método acupuntural en gestantes a término. Hospital Docente Ginecobstétrico Provincial "Dr. Julio Rafael Alfonso Medina" [thesis]. Matanzas: Universidad de Ciencias Médicas de Matanzas; 1995.
13. Espinoza A. El método acupuntural en la estimulación del parto y la madurez cervical. Hospital Docente Ginecobstétrico Provincial "Dr. Julio Rafael Alfonso Medina" de Matanzas [thesis]. Matanzas: Universidad de Ciencias Médicas de Matanzas; 2012.
14. Suárez Y. Estimulación del trabajo de parto con acupuntura en pacientes con Diabetes Mellitus Gestacional, Hospital Docente Ginecobstétrico Provincial "Dr. Julio Rafael Alfonso Medina" [thesis]. Matanzas: Universidad de Ciencias Médicas de Matanzas; 2014.
15. Martell Rodríguez A. Acupuntura en inducción del parto en gestantes a término con rotura prematura de membranas. Hospital Docente Ginecobstétrico Provincial "Dr. Julio Rafael Alfonso Medina" [thesis]. Matanzas: Universidad de Ciencias Médicas de Matanzas; 2016.
16. Wheeler V, Ariel H, Michael B. Cervical ripening and induction of labor. *Am Fam Physician* [Online]. 2022 [cited 2023/11/16];105(2):177-86. Available from: <https://www.aafp.org/pubs/afp/issues/2022/0200/p177.html>



17. Lopes GA, Teixeira TT, Leister N, et al. Methods of induction and augmentation of labor in a freestanding birth center: a cross-sectional study. Rev Esc Enferm USP. 2023;57:e20230158. DOI: 10.1590/1980-220X-REEUSP-2023-0158en.

18. Álvarez Tudela CR, Carrasco Russ BP, Sánchez Concha FI, et al. Efectividad de métodos naturales para inducir el trabajo de parto: revisión bibliográfica mundial, 2012-2021 [thesis Online]. Bellavista: Universidad San Sebastián; 2022 [cited 2023/11/16]. Available from: <https://repositorio.uss.cl/handle/uss/8529>

19. Miramon A. Effectiveness of Acupuncture for Induction of Labor: A Literature Review. JASA [Online]. 2020 [cited 2023/11/16];7(3). Available from: <https://openurl.ebsco.com/EPDB%3Agcd%3A2%3A28807474/detailv2?sid=ebsco%3Aplink%3Ascholar&id=ebsco%3Agcd%3A146068514&crl=c>

20. Schlaeger JM, Gabzdyl EM, Bussell JL, et al. Acupuncture and Acupressure in Labor. J Midwifery Womens Health [Online]. 2017 [cited 2021/04/02];62(1):12-28. Available from: <https://pubmed.ncbi.nlm.nih.gov/28002621/>

21. Neri I, Pignatti L, Fontanesi F, et al. Acupuncture in Postdate Pregnancy Management. J Acupunct Meridian Stud [Online]. 2018 [cited 2021/04/21];11(5):332-6. Available from: <https://pubmed.ncbi.nlm.nih.gov/29890286/>

22. Amir N, Berger R, Grinfeld T, et al. Efficacy comparison between Chinese medicine's labor inducement methods and conventional methods customary in hospitals. Harefuah [Online]. 2015 [cited 2021/04/21];154(1):47-51. Available from: <https://pubmed.ncbi.nlm.nih.gov/25796676/>

23. Hernández Cabrera Y, Ruiz Hernández M. Preinducción del parto con misoprostol. Una opción útil en la maduración cervical anteparto. Medisur [Online]. 2017 [cited 2021/05/05];15(2):165-7. Available from: <http://www.medisur.sld.cu/index.php/medisur/article/view/3460>

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