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**Complementary and integrative health practices in a Brazilian freestanding birth centre: A cross-sectional study**

Nathalie **Leister**, PhD, RM; Thaís Trevisan **Teixeira**, MSc, RM; Victor Hugo Alves **Mascarenhas**, RNM; Luciana Magnoni Reberte **Gouveia**, PhD, RNM; Adriana **Caroci-Becker**, PhD, RNM; Maria Luiza **Riesco**, PhD, RNM

**ABSTRACT**

The study aimed to analyse the use of Complementary and Integrative Health Practices (CIHP) during labour and birth in a freestanding birth centre. A total of 28 different CIHP were applied with or used by laboring women. The most adopted CIHP were mind-body practices (99.9%) and natural products (35.5%); mostly used by primiparous women ( $p < .05$ ). Adopting CIHP can increase care quality, increase positive experiences during childbirth and promote evidence-based choices.

**Keywords:** Complementary therapies. Intrapartum care. Birthing centers. Community health services. Midwifery.

## Introduction

Complementary and Integrative Health (CIH) is defined as a set of knowledge, skills, and practices based on theories, beliefs, and experiences from different cultures that are not considered part of conventional medicine. However, its practices, known as Complementary and Integrative Health Practices (CIHP) are increasingly being included in different health systems and care aiming to complement and improve rather than replace conventional care.<sup>1,2</sup> In Brazil, as proposed in the National Policy of Integrative and Complementary Practices in 2006, the public health system started to offer a range of 29 CIHP as part of the care, with no cost for the service users. This policy aimed to strengthen its fundamental principles, based on a model of humanized and respectful care, centred on the integrality of the individual.<sup>3</sup>

The use of CIHP in labour and birth aims to improve care and promote women's comfort and wellbeing. Acupuncture, acupressure, aromatherapy, hydrotherapy, homeopathy, hypnosis, reflexology, and thermotherapy<sup>4,5,6,7</sup> are some of the CIHP adopted in labour and birth that have been more scientifically studied. The importance of CIHP in childbirth care was highlighted in 2018 by the International Confederation of Midwives when defining the essential competencies for practice in midwifery. The competence that stands out refers to promoting physiological labour and birth and the skills and attitudes to provide support for women using non-pharmacological pain relief methods, such as relaxation, massage, aromatherapy, respiratory control, and hydrotherapy.<sup>8</sup>

Considering that numerous CIHP are used during labour and birth and vary in different countries, contexts, services, and sites, studies are needed to demonstrate and enhance information on these practices.<sup>4</sup> Studies in midwifery-led units - in Brazil also called birth centres - where CIHP are more widely implemented and used according to women's desire and choice, are particularly important to study its contribution to women's positive

experience and to disseminate the practices during maternity care and its associated outcomes, benefits and recommendations.

### **Complementary and Integrative Health Practices**

Based on evidence-based practice (EBP) of anthroposophy, traditional Chinese medicine, and holistic and empirical experience, CIHP are used to promote women's comfort and wellbeing during the perinatal period. These practices' aims are diverse, such as to support pain management, adjust foetal positioning, and provide positive experiences during labour and birth.<sup>9</sup>

Depending on the purposes, professional's experience, and service users' wishes, the same therapy and practice can be applied in different ways, moments, and length of its application. For example, aromatherapy is a technique based on the use of essential oils<sup>10,11</sup>, and its application depends on the type of oil, clinical indication, and how the practice is applied. It can promote systemic relaxation, induction of labour, pain relief, or fatigue prevention. The essential oils can be diluted in vegetable oils for massage, inhaled using a candle or electric diffuser, used in compresses, or added in the water during a bath.<sup>10</sup> The use of essential oils has increased in clinical childbirth practice mainly due to the support of scientific evidence. A meta-analysis that analysed the effectiveness of essential oils in childbirth care shows that women report a significant reduction of pain sensation at all stages of labour.<sup>11,12</sup>

Another commonly used CIHP is the warm water and its different applications. Warm shower aims to promote pain relief during labour<sup>13</sup>, favour freedom of position, and reduce labour length.<sup>14</sup> In addition to these benefits, warm water immersion also promotes resting, considering that the person remains in semi-seated, supine, or lateral position. Due to the studies' heterogeneity, there is limited evidence regarding its benefits, but no adverse

outcomes for parents or newborns were reported.<sup>15</sup> The foot soak in warm water aims to maintain body heat, provide comfort and relaxation, and reduce anxiety. The feet are immersed into the water to approximately knee height, preferably covered with a towel, and it can be associated with essential oils, herbs, or mustard powder.<sup>16,17</sup>

Traditional Chinese medicine techniques, acupuncture, acupressure, and moxibustion are based on the body's energy meridians' principles. While acupuncture adjusts the flow of energy through needles, the acupressure uses local pressure and the moxibustion, the heat from the coals of an artemisia stick. These techniques aim to relieve pain and augment the labour by rebalancing body energy.<sup>18,19</sup>

Some studies found that acupuncture could lead to induction of labour because promotes cervical softening and effacement within a 24-hours period. The acupressure could reduce the duration of the second stage of labour due to a controlled stimulus on the uterine contractions if the Sanyinjiao and Hegu points are pressured, which are directly associated with the reproductive organs and systemic analgesia, respectively.<sup>20-23</sup> The use of moxibustion antenatally could reduce the number of non-cephalic presentations at birth when used together with acupuncture or some postural techniques because it promotes a natural cephalic version late in the pregnancy. Intrapartum, moxibustion stimulates uterine contractions contributing to the reduction of oxytocin administration.<sup>24</sup>

Other practices like walking, squatting, pelvic balance, rebozo sifting, dance, birthing chair exercises, the all-fours position, and the use of the birthing ball aim to promote vertical positions and freedom of pelvic movement, facilitating the progression of labour to promote the descent and internal rotation of the foetal position.<sup>14,25-27</sup>

Among the postural therapies, 20 to 90 minutes of exercises with the birthing ball promotes pain reduction. The use of the peanut ball – a variation of the birthing ball - is being

studied to verify its effectiveness in decreasing the labour length, increasing the incidence of spontaneous vaginal birth and reducing the rates of caesareans.<sup>28,29</sup>

Breathing exercises with slow and deep inspiration, exhalation, and vocalization contribute to women's concentration during the contractions. It promotes pain relief and improves the sense of control and positive emotional experience in labour and birth as massages with or without oils and the warm packs or compresses.<sup>30-33</sup>

Music therapy can reduce anxiety levels during labour, promote pain relief, and is considered a way to provide psychological support to relieve stress and promote sense of control during labour and birth. In addition, music therapy promotes autonomy.<sup>34,35</sup>

Another CIHP widely used in childbirth care is phytotherapy with soothing teas as chamomile<sup>36</sup> and stimulants teas as clove, cinnamon, ginger, and black pepper. Although there is still no scientific evidence for the benefits of these teas during labour, the use of ginger during pregnancy can be effective in treating nausea and vomiting due to its anticholinergic and antihistamine properties.<sup>37</sup>

Evening primrose and castor oils are used to stimulate or augment labour.<sup>38,39</sup> The first documented use of castor oil to induce labour is from Ancient Egypt. This oil stimulates the intestine peristalsis resulted from a cathartic process mediated by the release of prostaglandins. It is considered safe without causing complications during the induction process, and it is effective to induce labour in multiparous women.<sup>39-41</sup> Stimulating oils can also promote uterine contractions through the body heating during a massage.<sup>42</sup>

Membrane sweeping is also used to induce and stimulate labour, but mechanically. This practice is more effective when practiced after 38 gestational weeks. Besides that, the procedure is safe. A meta-analysis and a systematic review showed that this practice effectively promotes the spontaneous onset of labour, reducing hospitalization to induce the labour pharmacologically.<sup>43,44</sup>

Hypnotherapy, Bach flower remedies, and Reiki are less used during labour and birth and have limited scientific evidence; however, its use aim to reduce the pain sensation during labour and promote satisfaction with the childbirth.<sup>45-47</sup>

Many of the CIHP are based on traditional and empirical knowledge but lack scientific evidence. According to the proposal, indication, and person's wishes, the practices can be used in all stages of labour. Therefore, this study aimed to describe and analyse the use of CIHP in a freestanding birth centre.

## **Methods**

### *Study design*

Cross-sectional study.

### *Setting*

This study was carried out at Casa Angela Birth Centre, a freestanding birth centre<sup>48</sup>, located in the city of São Paulo, Brazil, and managed by a Brazilian non-governmental organization, which works for the integrative development of human beings and with anthroposophic approach.

Casa Angela opened in 2008 and has been part of the Brazilian public health system since 2016. It provides care for people with straightforward pregnancies antenatally, during labour and births, and postnatally. The midwifery staff is trained to manage urgencies and emergencies, and an ambulance is there if a transfer to the reference hospital is needed, located less than 3 kilometres/10 minutes away from the birth centre.

Casa Angela is led by midwives. Its philosophy of care is holistic, and the best midwifery EBP guides the care. The use of CIHP is based on the São Paulo city guideline for freestanding birth centres.<sup>9</sup>



In addition to supplementing the National Policy of Integrative and Complementary Practices, an important reason to write a particular CIHP chapter in the São Paulo's guideline for freestanding birth centres was to formalize these practices in maternity care. Also, to inspire other services to know and adopt more CIHP and guide their use based on the tripod of scientific evidence, professional experience, and women's autonomy.

Another reason is the little published scientific evidence on CIHP in childbirth care. Therefore, a guideline showing which practices are carried out at Casa Angela could improve and enhance knowledge about the CIHP. In order to encourage their implementation, the chapter also mentions CIHP indications and contraindications, precautions when using each one, ingredients, and techniques of preparation.

Even if not stated in any guideline, Casa Angela does not limit the use of CIHP; however, it encourages parents, birth partners, and care providers to use any non-pharmacological practice to benefit and improve the care during pregnancy and birth. Casa Angela also promotes internal and external training and holds workshops to promote and share the use of CIHP.

### *Population and sample*

The study population and sample were all people who gave birth at Casa Angela from January 2012 to December 2018, corresponding to 1,473 women.

### *Data collection and CIHP classification*

In 2018, Casa Angela founded their Centre for Research, Learning, and Consultancy, and the professionals elaborated a database collecting retrospective data from 2012 to 2018 based on the service users' health records (booking appointment, labour and birth records, and professionals' documentation). The anonymous data extracted for this research from the

database includes women characteristics such as age, race, education level, marital status, parity; and integrative practices used/performed during care from admission to discharge.

We identified 28 CIHP adopted by women, birth partners, and midwives at Casa Angela; and classified and grouped the practices into 16 therapies and three approaches (mind-body practices, natural products, and traditional Chinese medicine) based on the National Centre for Complementary and Integrative Health (NCCIH) of the National Institutes of Health of the United States of America.

### *Statistical analysis*

The database was stored in MSExcel spreadsheets, and the mean, standard deviation (SD), absolute and relative frequencies were calculated for the maternal characteristics, CIHP practices, therapies, and approaches. Additionally, we stratified women into two groups: without previous births and with previous births. The use of the therapies was compared through the chi-square test using the GraphPad Software, and  $p$ -values  $<.05$  were considered significant.

### *Ethical considerations*

This study was approved by Casa Angela Centre for Research, Learning and Consultancy and by the Research Ethics Committee of the School of Nursing of the University of São Paulo.

## **Findings**

The results considered all 1,473 women that gave birth at Casa Angela from January 2012 to December 2018. Of these, 1,457 (98.9%) used some CIHP.

The main women's sociodemographic characteristics were: age 27.4 (SD=5.2) years, white race (59.3%), at least secondary education (92.2%), with a partner (66.3%), and without previous birth (70.6%) (Table 1).

**Table 1. Women's characteristics (n = 1473)**

| <b>Characteristic</b>              | <b>Mean (SD) (min-max)</b> | <b>n (%)</b> |
|------------------------------------|----------------------------|--------------|
| <b>Age (years) (n = 1473)</b>      | 27.4 (5.2) (15-46)         |              |
| <b>Race<sup>a</sup> (n = 1387)</b> |                            |              |
| White                              |                            | 823 (59.3)   |
| Mixed                              |                            | 345 (24.9)   |
| Black                              |                            | 160 (11.5)   |
| East Asian                         |                            | 47 (3.4)     |
| Indigenous                         |                            | 12 (0.9)     |
| <b>Education level (n = 1460)</b>  |                            |              |
| Elementary                         |                            | 30 (2.1)     |
| Primary <sup>b</sup>               |                            | 83 (5.7)     |
| Secondary <sup>c</sup>             |                            | 642 (43.9)   |
| University                         |                            | 705 (48.3)   |
| <b>Marital status (n = 1445)</b>   |                            |              |
| With partner                       |                            | 958 (66.3)   |
| Without partner                    |                            | 487 (33.7)   |
| <b>Previous birth (n = 1473)</b>   |                            |              |
| No                                 |                            | 1040 (70.6)  |
| Yes                                |                            | 433 (29.4)   |

<sup>a</sup> As defined by Casa Angela records and protocols

<sup>b</sup> At least 8 years

<sup>c</sup> At least 11 years

The CIHP used by women are presented in Table 2. As described in the Materials and Methods section, each therapy/practice was grouped and classified into the approaches, according to NCCIH.

Almost all of the women that used some mind-body practices approach (99.9%), mainly postural therapies (89.3%), hydrotherapy (89.0%), breathing techniques (80.7%), and massage (75.0%). Other less used therapies were music, heat, Reiki, Membrane sweeping, Bach flower remedies, and hypnosis. The approaches categorised as natural products and traditional Chinese medicine were used by fewer women (35.3% and 9.5%, respectively).

**Table 2. Complementary health approaches and therapies/practices used during labour****(n = 1457)**

| <b>Approach<sup>a</sup></b>                     | <b>Therapy/Practice</b>                  | <b>n (%)</b>   |             |
|---|--|--|-------------|
| Mind-body practices<br>(n = 1456;<br>99.9%)     | Postural therapy<br>(n = 1301;<br>89.3%) | Squat exercises/all-fours  | 954 (65.5)  |
|   |  | Upright positions (walking/birth ladder/birth support rope) <sup>b</sup> | 928 (63.7)  |
|   |  | Birth ball/rocking chair/pelvic balance <sup>c</sup>                     | 804 (55.2)  |
|   |  | Birthing stool   | 590 (40.5)  |
|   |  | Dancing  | 52 (3.6)    |
|   |  | Hydrotherapy   | 1077 (73.9) |
|   | Hydrotherapy<br>(n = 1297;<br>89.0%)     | Shower   | 927 (63.6)  |
|   |  | Soaking feet   | 38 (2.6)    |
|   |  | Breathing techniques   | 1176 (80.7) |
|   | Massage<br>(n = 1093;<br>75.0%)          | Soothing   | 1011 (69.4) |
|   |  | Rebozo   | 158 (10.8)  |
|   |  | Stimulating  | 114 (7.8)   |
|   | Music therapy                            |  | 243 (16.7)  |
|   | Heat therapy (hot-water packs)           |  | 232 (15.9)  |
|   | Reiki therapy                            |  | 5 (0.3)     |
| Membrane sweeping                               |  | 3 (0.2)  |             |
| Bach flower remedies                            |  | 1 (0.1)  |             |
| Hypnosis  |  | 1 (0.1)  |             |
| Natural products<br>(n = 514; 35.3%)            | Aromatherapy                             | 371 (25.5)   |             |
|   | Herbal medicine<br>(n = 202; 13.9%)      | Castor oil   | 139 (9.5)   |
|   |  | Stimulating tea  | 98 (6.7)    |
|   |  | Phytotherapy not specified   | 6 (0.4)     |
|   |  | Primrose oil   | 5 (0.3)     |
|   |  | Soothing tea   | 2 (0.1)     |
| Lemon/rosemary compresses <sup>d</sup>          | 60 (4.1)                                 |  |             |
| Traditional Chinese medicine<br>(n = 138; 9.5%) | Acupuncture                              | 87 (6.0)   |             |
|   | Acupressure                              | 71 (4.9)   |             |
|   | Moxibustion                              | 10 (0.7)   |             |

<sup>a</sup> According to the National Centre for Complementary and Integrative Health (NCCIH) of the National Institutes of Health of the United States of America.

<sup>b</sup> Walking = 811; birth ladder = 251; birth support rope = 171

<sup>c</sup> Birth ball = 750; rocking chair = 202; pelvic balance = 21

<sup>d</sup> Lemon = 59; rosemary = 1

Table 3 shows the therapies/practices used by women with (n = 1040; 70.6%) and without (n = 433; 29.4%) previous births. Most of the therapies/practices were more used by women without previous birth ( $p < .05$ ), except herbal medicine and traditional Chinese

medicine (acupuncture, acupressure, and moxibustion). Therapies/practices used by less than 4% of all women were not included in table 3.

**Table 3. Comparison of complementary therapies used during labour among women with and without previous birth and p-value (n = 1457)**

| Therapy   | Previous birth         |                        | p-value <sup>a</sup> |
|---|------------------------|------------------------|----------------------|
|   | Yes (n = 423)<br>n (%) | No (n = 1034)<br>n (%) |                      |
| Postural therapy (n = 1301)                         | 354 (24.3)             | 947 (65.0)             | < <b>0.001</b>       |
| Hydrotherapy (n = 1297)                             | 350 (24.0)             | 947 (65.0)             | < <b>0.001</b>       |
| Breathing techniques (n = 1176)                     | 326 (22.4)             | 850 (58.3)             | <b>0.024</b>         |
| Massage (n = 1093)                                  | 275 (18.9)             | 818 (56.1)             | < <b>0.001</b>       |
| Aromatherapy (n = 371)                              | 79 (5.4)               | 292 (20.0)             | < <b>0.001</b>       |
| Music therapy (n = 243)                             | 48 (3.3)               | 195 (13.9)             | < <b>0.001</b>       |
| Hot-water packs (n = 232)                           | 41 (2.8)               | 191 (13.1)             | < <b>0.001</b>       |
| Herbal medicine (n = 202)                           | 47 (3.2)               | 155 (10.6)             | 0.052                |
| Traditional Chinese Medicine (n = 138) <sup>b</sup> | 35 (2.4)               | 103 (7.1)              | 0.318                |
| Lemon/rosemary compresses (n = 60)                  | 6 (0.4)                | 54 (3.7)               | < <b>0.001</b>       |

<sup>a</sup> Chi-square test

<sup>b</sup> Acupuncture, acupressure, and moxibustion

## Discussion

People having birth at Casa Angela have antenatal care with the same group of midwives who attend birth (continuity of care). During pregnancy, midwives inform women about the availability and recommended application of CIHP, and encourage them to use, discuss and share their choices and experiences with others.

In this study, women used 28 CIHP therapies/practices, which were classified into three approaches: mind-body practices, natural products, and traditional Chinese medicine, based on the classification of the NCCIH.<sup>1</sup>

During labour and birth, CIHP can be used together or combined, without limits. Some of them do not require additional cost other than the continuous training of staff, which leads to a high use prevalence.

We found that 98.9% of the women used some CIHP. This finding reveals a great use of CIHP for pain relief and as a birth process facilitator with techniques that integrate mind and body. This percentage is higher than others studies identified in our literature review, which is around 70.0%<sup>50</sup>, and may be due to the bonding between the health care professional and the woman promoted antenatally.

A birth preparation program is a health promotion strategy in which experiences and information are generally shared to reinforce women's autonomy during labour, prevent physical discomfort, and reduce anxiety levels during the perinatal period.<sup>52</sup> Casa Angela offers the programme "Pathway for birth" to promote biopsychosocial and holistic care to women. The "Pathway for birth" consists of 5 antenatal care sessions with the themes: women's body changes during pregnancy; body activities and use of CIHP to promote physiological birth; postpartum preparation; breastfeeding and baby care. Birth partners and other companions can also attend the sessions and are encouraged to contribute.

During the session "body activities and use of CIHP to promote physiological birth", the midwifery team incentive women to experience and practice positions that can facilitate the birth process in each of the labour stages, the active body movement, the use of massages, hydrotherapy, breathing techniques, and the application of hot-water pack. All of them can be used with or without natural products to promote relaxation, contractions sensation relief and positive birth experience.

Scientific literature indicates that women that gave birth in a midwife-led model of care are less likely to experience birth intervention and more likely to be satisfied with their care than women who birth in other models of care.<sup>49</sup> Along with a birth centre environment, women are more likely to be autonomous and feel in charge of their own labour and birth, which can lead to choices beyond conventional care as the possibility to freely use CIHP

The use of these practices can also be based on the midwife's indication or offered by companions or doulas. Some applications are guided by the institutional protocols, while others are used according to usual and empirical practices.

In this study, almost all women used mind-body practices (99.9%) during labour. The most prevalent therapies/practice in this approach were postural therapy, followed by hydrotherapy, breathing techniques, and massage. Postural therapy includes squatting exercises, the all-fours position, upright positions, the birthing ball, rocking chair, pelvic balance, the birthing stool, and dancing. These practices are usually used to facilitate the foetal head's descent in the woman's pelvis, promote pain relief, reduce labour length, and promote freedom of movement.<sup>14</sup>

The use of CIHP for pain relief is recommended to contribute to satisfaction and a positive birth experience.<sup>2</sup> Among the practices most adopted at Casa Angela, the use of hydrotherapy as a pain relief method stands out. The use of warm water in a bathtub increases the ability to cope with the contractions and to have a physiological birth without increasing risk of an adverse event.<sup>15</sup> The warm shower relieves pain and promotes positive feelings toward the birth process during the first stage of labour.<sup>13</sup> While the soaking feet practice still requires evidence for pain relief during labour, relaxation promotion, and anxiety reduction, but usually is used at the beginning of the first stage of labour.<sup>17</sup>

Breathing techniques effectively reduce anxiety, promote pain management, and reduce the length of the birth.<sup>33,51</sup> In this study, breathing techniques were used by 80.7% of women. It is worth saying that women who participate in learning activities for pain relief during pregnancy report that they were able to maintain self-control and cope with the pain, especially when using breathing exercises, the birth ball, massages, hydrotherapy, and vertical positions.<sup>52</sup>

Practices that were less used by women, such as Reiki, Bach flower remedies, and hypnosis, are not established at Casa Angela and are not part of the institutional professional training for midwives. These practices are offered by external professionals, companions, or Casa Angela's midwives certified to provide them.

Other less used practices were membrane sweeping, primrose oil, and soothing tea. These are commonly used late in the pregnancy for relaxation or natural induction of labour, so its low prevalence can be justified because, in this study, we evaluated CHIP used during labour.

Traditional Chinese medicine was also less frequently used in this study despite the effectiveness of acupuncture and acupressure in reducing pain, increasing satisfaction with pain management, and reducing pharmacological methods.<sup>19</sup> However, they are techniques that require complementary professional training and the use of specific materials such as needles and seeds that are not provided by Casa Angela, so this can be the reason for the low prevalence use found in this study.

CIHP had a high prevalence regardless of whether the woman was nulliparous or not. However, among nulliparous women, there was a statistical difference in the use of some specific therapies, such as postural therapy, hydrotherapy, massage, aromatherapy, music therapy, hot-water pack, and lemon/rosemary compress. That may be related to the fact that labour lasts longer in primiparous women than in those who had a previous birth<sup>53</sup> and are more willing to use CIHP during the latent phase of labour.

Casa Angela follows the recommendation that women are only admitted in the active labour phase of labour to avoid women staying in the institution for an extended period. During the latent phase, labour support and monitoring are recommended through outpatient or home visits and telephone contact.<sup>54</sup> The CIHP are also a resource used in health providers' professional practice to manage prolonged and difficult births.<sup>27</sup>



The continuous staff training and the development of institutional guidelines can emphasise, promote, and expand the use and availability of CIHP. This study's findings highlight the need for future studies that analyse the use of CIHP in Midwifery. The safety and effectiveness of CIHP should be studied as well, as most of the practices are carried out and based on traditions, cultural aspects, and practical experience of midwives. Usually, women who adopt CIHP have positive experience and outcomes<sup>55</sup>, so studying their efficacy would benefit and increase the quality of care, service users and professionals' experience during childbirth and promote choice and evidence-based care.

This study's main limitation is the design and data collection based on the service birth records. Prospective studies could address the lack of information regarding the practices indications, time and length of application, effectiveness, and outcomes of each practice's use.

## **Conclusion**

Almost all women received some CIHP, mainly mind-body practices, such as postural therapies, hydrotherapy, breathing techniques, and massage. Aromatherapy was the primary approached therapy from the natural products. Except for herbal and traditional Chinese medicine (acupuncture, acupressure, and moxibustion), the CIHP were more used among women without previous births.

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