

REVIEW ARTICLE

A Birds Eye View on Different Ayurvedic Treatment Modalities in Cerebral Palsy in Children

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ABSTRACT

Introduction: Cerebral palsy (CP) is a permanent, non-progressive, and occasionally evolving disorder of tone, movement, or posture caused by a change to the developing brain, which may be due to birth asphyxia, trauma, infection, or prematurity in antenatal, perinatal, or post-natal periods.

Material and Methods: A systematic review of the literature available was carried out on PubMed, Ayush Research Portal, Dhara, and Scopus regarding Ayurvedic intervention in the management of CP.

Results: The treatment program for a child with spasticity may include Ayurvedic drugs, allied health therapy, and exercise. Ayurveda recommends multiple treatment options for CP. Out of these treatment options herbal drugs, Panchakarma therapies, etc. are most commended for this disease.

Discussion: The present paper reviewed various clinical studies to ascertain the efficacies of these modalities and found that Ayurveda can efficiently manage CP along with its associated condition by improving movement, reducing spasticity, and strengthening the muscles.

Conclusion: The current review provides motivating evidence for the usage of herbal treatment in CP and further research utilizes robust available methodology.

1. INTRODUCTION

Cerebral palsy (CP) is a motor function disorder caused by a defect in the developing brain, which may be due to birth asphyxia, trauma, infection, or prematurity in antenatal, perinatal, or postnatal periods. In developing nations like India, the incidence of CP is approximately 3/1,000 live births. This has not altered recently despite better antenatal care and public health.^[1] Although CP begins in childhood, it impacts the individual's whole life course as well as the health-care system. Identifying appropriate interventions to alleviate disability throughout the life of a person with CP is urgent.^[2] The male gender was classified as a risk factor for CP. Epilepsy has been shown to be the most commonly associated comorbidity.^[3] CP is predominantly a mobility issue, but many children who have it also have additional

disabilities that may lower their quality of life and shorten their life span. The most prevalent mobility difficulty in 80% of kids with CP is spasticity.^[4]

As there is an association of *siras* (central nervous system), CP can be taken into consideration as *Siromarmaabhigahaataja vatavyadhi* and the clinical symptoms are in the form of *sarvaangavaata* (involvement of the whole body) *paksha-vadha* (hemiplegic), *pangu* (diplegic). The treatment of *Siromarmaabhigahaata* is mentioned as *Abhyanga*, *Swedana*, and *Upanaha*.^[5]

The aim of the present review is to find out different Ayurvedic treatment modalities available in CP in the pediatric population.

1.1. Clinical Risk Factors for CP during Pregnancy

Much scientific evidence shows that CP is often associated with longstanding intrauterine pathologies, such as genetic changes and

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possible environmental factors such as diseases and infections in the body, intrauterine growth restriction (IUGR), post-partum hemorrhage, and cervical tension, and threatened miscarriage.^[6]

1.2. Premature Birth

The incidence of CP in pre-mature babies is higher than in term babies. Pre-mature birth is an important risk factor for CP.^[7]

1.3. Coexisting Congenital Anomalies

The prevalence of congenital anomalies in children with CP is much higher than in the general population and most are cerebral, such as schizencephaly and hydrocephaly.^[8]

1.4. Intrauterine Infection

Some causes include damage after perinatal infection (for example, maternal infection during pregnancy and/or labor that affects the fetus and brain at birth).^[9]

1.5. Abnormal Fetal Inflammatory Response and Thrombophilia

Another possible cause and mechanism of CP is abnormalities in fetuses and newborns.^[10] An excessive or abnormal increase in cytokines after infection (due to genetic predisposition or mutation) and the voluntary emergence of an inflammatory response on the part of the body's immune system or toxins cause an autoimmune attack on the fetus or fetus. The baby's nerves are developing. The immature brain of pre-mature infants is vulnerable to the effects of pro-inflammatory cytokines.^[11]

1.6. Intrauterine Growth Restriction

In particular, spastic CP increases with the degree of fetal growth restriction.^[12] Our large epidemiological study of Australian children and normal controls revealed IUGR to be a significant risk factor for CP.^[13]

1.7. Multiple Pregnancy

The risk of two IVF twins is more than 4 times greater (9.5/1000), which is another reason why transfer from family to child is supported.^[14]

1.8. Tight Nuchal Cord at Delivery

Potentially chronic asphyxiating conditions, chiefly a tight nuchal cord, increase the risk of spastic quadriplegic CP. A large population-based study noted that a tight umbilical cord around the fetal neck, requiring cutting before delivery of the shoulders, or a true umbilical knot increased the risk of spastic quadriplegia 18-fold.^[15]

1.9. Placental Pathology

Chorioamnionitis, funisitis, and in particular necrotizing, funisitis all are evidence of infection predating labor and are associated in all epidemiological studies with an increased risk of CP.^[16]

1.10. Viral Infection in Pregnancy

Studies using polymerase chain reaction techniques on neonatal blood spots from CP cases and controls show increased CP risk after both Cytomegalovirus and Epstein-Barr virus infections during pregnancy.^[17]

1.11. Genetic Causes of CP

Genetic causes have long been suspected because of the link with congenital malformations and increased risk in consanguineous families and monozygotic twins.^[18]

1.12. Classification of CP^[4]

According to the kind of movement issue that is present (spastic, athetoid, ataxic, or mixed), the body parts affected (hemiplegia, diplegia, or quadriplegia), or the functions impacted (mild, moderate, severe, or profound), CP is frequently categorized. Spastic CP comes in many types depending on the body parts affected.

In spastic hemiplegia or hemiparesis, unilateral side of the body is affected by the arm, hand, and occasionally the leg. While intellect is often normal, children of this kind may experience delays in their ability to speak. Spastic diplegia or diparesis causes less damage to the arms and face in people of this kind, who often suffer muscular stiffness in the legs. Language proficiency and intelligence are typically average. Spastic quadriplegia or quadriplegia is the most severe kind of CP, characterized by a floppy, or weak, neck and extreme rigidity in the limbs and legs. Spastic quadriplegics are typically unable to walk and frequently have speech difficulties. Intellectual or developmental disability of this kind can range from mild to severe.

Dyskinetic CP is a kind that entails erratic hand movements, feet, arms, or legs that are sluggish and out of control. Some kids may drool or make faces due to hyperactive facial and tongue muscles. People with this kind frequently struggle to walk or sit upright. Intellectual difficulties are typically absent in people with dyskinetic CP.

Ataxic CP has an impact on balance and depth perception. When walking or performing rapid or precise actions such as writing, buttoning a shirt, or reaching for a book, people with ataxic CP have difficulty.

In mixed types of CP, the symptoms overlap with those of the other types which are spastic, dyskinesia, and ataxic.

2. MATERIALS AND METHODS

An electronic search was carried out on PubMed, Ayush Research Portal, Dhara, and Scopus regarding Ayurvedic intervention in the management of CP. All collected data were analyzed specifically for clinical studies, and case studies regarding treatment protocol available in CP. Keywords used for database analysis were "Cerebral Palsy," with combined terminologies of "herbal drug/medicines," "Ayurvedic drugs," "Medicinal plants," "Herbs," "integrative therapy," "botanical herbs," and other specific Latin or Sanskrit names of Ayurvedic drugs.

3. RESULTS AND DISCUSSION

Comprehensive assessment by clinical efficacy review of medicinal plants is a quite convoluted task, as herbal preparations have manifold chemical compositions. Drug action in Ayurvedic treatment is dependent on many factors, that is, genetic value differences; different types of environmental factors; various qualities of soil; airborne vectors; used plant parts; and method of preparation, and prakruti.

There is developing attention to the utilization of natural herbal medications to treat cerebral paralysis, rather than utilizing chemical-based synthetic formulations across the globe. Keeping in view, the current scenario of the problem in society due to changes in lifestyle and to improve the quality of life of a person suffering from CP, the present critical review has been planned. Although, the duration

of the different treatment modalities is long but the current review recommends that there are a lot of clinical studies, which reveal that Ayurvedic interventions undoubtedly improve the quality of life of the patients suffering from CP.

4. CONCLUSION

CP is a chronic motor disability influencing a significant pediatric population and costing to a great extent on country's GDP. Ayurveda can give elective, conservative, economical, and more successful treatment choices for children afflicted by CP. The current review provides motivating evidence for the usage of herbal treatment in CP and further research utilizes robust available methodology. These will make the way for the next step in the field of Ayurvedic management of CP.

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All the authors contributed equally in the design and execution of the article.

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8. ETHICAL APPROVALS

This study is not required ethical clearance as it is a review study.

9. CONFLICTS OF INTEREST

Nil.

10. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

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REFERENCES

- MacLennan AH, Thompson SC, Gecz J. Cerebral palsy: Causes, pathways, and the role of genetic variants. *Am J Obstet Gynecol* 2015;213:779-88.
- Ryan JM, Cassidy EE, Noorduyn SG, O'Connell NE. Exercise interventions for cerebral palsy. *Cochrane Database Syst Rev* 2017;6:CD011660.
- Al-Jabri BA, Al-Amri AS, Jawhari AA, Sait RM, Talb RY. Prevalence, types, and outcomes of cerebral palsy at a tertiary center in Jeddah, Saudi Arabia. *Cureus* 2022;14:e27716.
- Basoya S, Kumar S, Wanjari A. Cerebral palsy: A narrative review on childhood disorder. *Cureus* 2023;15:e49050.
- Sharma RK, Dash B, Translator. Agnivesa, Caraka Samhita. Siddhistanam, Trimarmeeeyam Siddhim Adhyaya, 9/6. Vol. 2. Varanasi: Chaukhambha Sanskrit Series Office; 2012. p. 329.
- Stanley F, Blair E, Alberman E. *Cerebral Palsies: Epidemiology and Causal Pathways*. Vol. 151. London, United Kingdom: MacKeith Press; 2000.
- Bear JJ, Wu YW. Maternal infections during pregnancy and cerebral palsy in the child. *Pediatr Neurol* 2016;57:74-9.
- Garne E, Dolk H, Krägeloh-Mann I, Holst Ravn S, Cans C, SCPE Collaborative Group. Cerebral palsy and congenital malformations. *Eur J Paediatr Neurol* 2008;12:82-8.
- Grether JK, Nelson KB. Maternal infection and cerebral palsy in infants of normal birth weight. *JAMA* 1997;278:207-11. Erratum in: *JAMA* 1998;279:118.
- Yoon BH, Romero R, Park JS, Kim CJ, Kim SH, Choi JH, *et al.* Fetal exposure to an intra-amniotic inflammation and the development of cerebral palsy at the age of three years. *Am J Obstet Gynecol* 2000;182:675-81.
- Gibson CS, MacLennan AH, Hague WM, Haan EA, Priest K, Chan A, *et al.* Associations between inherited thrombophilias, gestational age, and cerebral palsy. *Am J Obstet Gynecol* 2005;193:1437.
- Blair EM, Nelson KB. Fetal growth restriction and risk of cerebral palsy in singletons born after at least 35 weeks' gestation. *Am J Obstet Gynecol* 2015;212:520.e1-7.
- O'Callaghan ME, MacLennan AH, Gibson CS, McMichael GL, Haan EA, Broadbent JL, *et al.* Epidemiologic associations with cerebral palsy. *Obstet Gynecol* 2011;118:576-82.
- Davies MJ, Moore VM, Willson KJ, Van Essen P, Priest K, Scott H, *et al.* Reproductive technologies and the risk of birth defects. *N Engl J Med* 2012;366:1803-13.
- Nelson KB, Grether JK. Potentially asphyxiating conditions and spastic cerebral palsy in infants of normal birth weight. *Am J Obstet Gynecol* 1998;179:507-13.
- Craver RD, Baldwin VJ. Necrotizing funisitis. *Obstet Gynecol* 1992;79:64-70.
- McMichael G, MacLennan A, Gibson C, Alvino E, Goldwater P, Haan E, *et al.* *Cytomegalovirus* and Epstein-barr virus may be associated with some cases of cerebral palsy. *J Matern Fetal Neonatal Med* 2012;25:2078-81.
- Schaefer GB. Genetics considerations in cerebral palsy. *Semin Pediatr Neurol* 2008;15:21-6.
- Shailaja U, Rao Prasanna N, Arun Raj GR. Clinical study on the efficacy of Samvardhana ghrita orally and by matrabasti in motor disabilities of cerebral palsy in children. *Int J Res Ayurveda Pharm* 2013;4:373-7.
- Palande A, Ojha NK. Ayurveda management of spasticity in children with cerebral palsy: A randomized controlled trial. *Int J Res Ayurveda Pharm* 2017;8:14-9.
- Kumar D, Ojha NK. Ayurvedic management of spastic cerebral palsy: A case study. *Int J Res Ayurveda Pharm* 2018;9:50-2.
- Kanzode SP, Kori VK, Patel KS, Rajagopala S. A case study on ayurvedic management of cerebral palsy with Chaturbhadra Kalpa Basti. *Eur J Biomed Pharm Sci* 2016;3:348-50.
- Bhinde SM. A case study on the Ayurvedic management of cerebral palsy. *Anc Sci Life* 2015;34:167-70.
- Shailaja U, Rao PN, Girish KJ, Arun Raj GR. Clinical study on the efficacy of Rajayapana Basti and Baladi Yoga in motor disabilities of cerebral palsy in children. *Ayu* 2014;35:294-9.
- Bhinde SM, Patel KS, Kori VK, Rajagopala S. Management of spastic cerebral palsy through multiple Ayurveda treatment modalities. *Ayu* 2014;35:462-6.
- Kumar Niraj S, Varsha S. A case study on the Ayurvedic management of spastic cerebral palsy due to birth Asphyxia. *J Nat Remedies* 2019;19:153-61.
- Shailaja U, Rao PN, Debnath P, Adhikari A. Exploratory study on the ayurvedic therapeutic management of cerebral palsy in children at a

- tertiary care hospital of Karnataka, India. *J Tradit Complement Med* 2014;4:49-55.
28. Rajput S, Patni K. Randomized clinical trial to evaluate the efficacy of Ashtamangal Ghrita oral and Nasya in the management of cerebral palsy. *Int J Ayurvedic Med* 2020;11:483-90.
29. Rathi R, Rathi B, Pandey VB, Verma J, Khedekar S. Comparative efficacy of therapeutic Panchkarma procedures in children with cerebral palsy. *Int J Ayurvedic Med* 2023;14:173-9.
30. Arun Raj GR, Uppinakuduru S, Rao PN. Comparative clinical study to assess the effectiveness of Salavana Upanaha Sweda with and

without Parisheka on spasticity in children with Cerebral Palsy. *Ann Ayurvedic Med* 2022;11:22-37.

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Table 1: Summary of different treatment modalities in Cerebral Palsy in Children.

S. No.	Author	Study	Year	Methodology	Result
1.	Shailaja <i>et al.</i>	Efficacy of <i>Samvardhana Ghritha</i> orally and by <i>Matrabasti</i> in motor disabilities of CP in children	2013	Patients of age 2-10 years were randomly distributed into two groups. Group A (<i>Samvardhana ghritha orally</i>) was treated with 5 g of <i>Samvardhana ghritha</i> with <i>Madhu</i> as <i>Anupama</i> twice daily for 48 days. In Group B, 20 mL of <i>Samvardhana ghritha as matrabasti</i> after local <i>Abhyanga</i> with <i>Moorchita Taila</i> and local <i>Swedana</i> with <i>Nadisweda</i> method	Both oral administration and the <i>basti</i> route of <i>Samvardhana Ghritha</i> have promising results in managing motor disabilities of CP in children. ^[19]
2.	Palande and Ojha	Ayurveda management of spasticity in children with CP: A randomized controlled trial	2017	Cases were randomly divided into three groups each comprising 10 patients. Group A was administered the Trial Drug (<i>Shishu Kalyan Ghritha</i>) and Panchakarma procedure (<i>Abhyanga & Shashtishali Pinda Sweda</i>). In Group B, <i>Kala Basti (Anuvāsana Basti: Dhavantar taila and Asthapana Basti: Dashmool Kwath)</i> and Panchakarma procedure, and in Group C Physiotherapy (Control group) were administered. Assessment was done by Ashworth scale for spasticity	Ayurveda management with <i>Shishu Kalyan Ghritha</i> and Panchakarma procedures including <i>Abhyanga</i> with <i>Dashmoola Taila, Shashtishali Pinda Sweda</i> has proved to be a better, safe, and cost-effective treatment modality for improving the spasticity. ^[20]
3.	Kumar and Ojha	Ayurvedic management of spastic CP: A case study.	2018	<i>Abhyanga</i> with <i>Balaashvagandhadi Taila</i> for 20 min followed by 15 days. <i>Shashtika Shali Pinda Sweda</i> for 20 min followed by 15 days. <i>Matra Basti</i> with <i>Balaashvagandhadi Taila</i> followed by 15 days. <i>Samshamana Aushadha</i> (an oral drug for 30 days) <i>Avindaasava</i> – 10 ml with equal water after food twice a day <i>Brahmighrita</i> - 10 ml with hot water before food twice a day. Three such courses were done with the interval of 15 days.	Panchakarma procedures such as <i>Abhayanga, Shashtika Shali Pinda Sweda</i> , and <i>Matra Basti</i> along with <i>Shamana Aushadi</i> gave moderate improvement in growth, development reducing spasticity & also helps the patient to improve the quality of life (QOL). ^[21]
4.	Kanzode <i>et al.</i>	A case study on Ayurvedic management of CP with <i>chaturbhadra kalpa basti</i>	2016	5 days <i>Udvaratana</i> (dry powder massage) followed by 5 days <i>Abhyanga</i> (massage with sudation) followed by 12 days <i>Chaturbhadra kalpa Basti</i> , such courses were done with an interval of 14 days. The total duration of therapy was 94 days.	Panchakarma procedures as well as appropriate internal medication can show a better improvement in a CP child and can help to reduce the extent of dependency on parents and to improve QOL. ^[22]
5.	Bhinde	A case study on the Ayurvedic management of CP	2015	Five days <i>Udvaratana</i> followed by 5 days massage with sudation followed by 12 days <i>Caturbhadra Kalpa Basti</i> . Three such courses were done with the interval of 14 days. <i>Udvaratana</i> With barley powder and horse gram powder for 20 min (5 days). <i>Abhyanga</i> With <i>Balataila</i> for 20 min followed by sudation for 20 min (5 days). <i>Caturbhadra Kalpa Basti</i> has been clearly indicated as free from complications. This protocol of <i>Basti</i> administration includes four <i>Sneha Bastis</i> to start with, followed by four <i>āsthāpana Basti</i> and four <i>Anuvāsana Bastis</i> . <i>Anuvāsana Basti</i> Thirty milliliter; lukewarm <i>Balataila</i> . <i>Āsthāpana Basti</i> One hundred and twenty milliliters; as per the classical reference of <i>Madhutailika Basti</i> . Internal medicine <i>Aṣṭāṅgaghrta</i> , throughout the treatment schedule, except the days on which <i>Basti</i> was given. <i>Anupāna</i> for internal medicine: Lukewarm water Dosage: 2.5 g once/day.	Ayurvedic Panchakarma therapy along with appropriate internal medication can do a lot for the improvement in QOL. ^[23]

(Contd...)

Table 1: (Continued)

S. No.	Author	Study	Year	Methodology	Result
6.	Shailaja <i>et al.</i>	Clinical study on the efficacy of <i>Rajayapana Basti (RB)</i> and <i>Baladi Yoga</i> in motor disabilities of CP in children	2014	Pediatric patients satisfying diagnostic criteria and between the age group of 2–10 years were included and randomly divided into two groups. In <i>RB</i> with <i>Baladi</i> group, patients were treated with <i>Mustadi Rajayapana Basti</i> for 8 days, followed by oral administration of <i>Baladi Yoga</i> with honey and ghee for 60 days. Before administering <i>Basti</i> , patients were subjected to <i>Sarvanga Abhyanga</i> and <i>Sastikashali Pinda Sveda</i> . In the control group, patients were given tablets of <i>Godhuma Choorna</i> for 60 days. Before administering the placebo tablet, the patients of the control group were given <i>Sarvanga Abhyanga</i> and <i>Sastikashali Pinda Sveda</i> for 8 days. The patients of the control group were given <i>Basti</i> with lukewarm water for 8 days.	<i>Mustadi RB</i> along with <i>Baladi Yoga</i> provided a significant improvement in all the parameters and has promising results in managing motor disabilities of CP in children. ^[24]
7.	Bhinde <i>et al.</i>	Management of spastic CP through multiple Ayurveda treatment modalities	2014	Patients were registered and treated with 5 days of <i>Udvaartana</i> , 5 days of <i>Abhyanga</i> followed by <i>Sarvanga Swedana</i> , and then 8 days of <i>Yoga Basti</i> . The same course of treatment has been repeated for 3 times with an interval of 14 days. <i>Ashtanga Ghrita</i> was given during the whole procedure as internal medication. Results of treatment were assessed with anthropometrical measurement, developmental milestone, Modified Ashworth Scale, spasm scale, reflex scale, and muscle power grading	A multisystem approach is needed to improve the condition of the patient. Panchakarma along with internal medication should be given to improve all the facets of spastic CP. <i>Yoga Basti</i> acts by their own mode of action and can be used freely for such disease conditions. ^[25]
8.	Niraj and Varsha	A Case Study on the Ayurvedic Management of Spastic CP Due to Birth Asphyxia	2019	The total period of treatment was 93 days, in which 5 days of <i>Abhyanga</i> (Massage) with <i>Nadi swedana</i> (steam kettle Sudation), 5 days of <i>Abhyanga</i> (Massage) with <i>Shashti Shali Pinda Swedana</i> (a type of Sudation) and then 7 days of <i>Matra Vasti</i> (Enema by Medicated oil in small dose) by <i>Ksheera Bala Taila</i> ; this schedule of treatment was given three times with a gap of 14 days. <i>Vacha mula</i> (Root of <i>Acorus calamus</i>) and <i>Samvardhana Ghrita</i> were given as internal medication during the total course of treatment.	The treatment protocol of oral medication with Panchakarma delivered better results in CP patients, especially improving anthropometric data (weight, height, chest circumference), delaying milestones (walking and language), reducing spasticity, and improving Quality of Life (QOL). ^[26]
9.	Shailaja <i>et al.</i>	Exploratory Study on the Ayurvedic Therapeutic Management of CP in Children at a Tertiary Care Hospital of Karnataka, India	2014	The study group received <i>Mustadi Rajayapana Basti</i> (enema with herbal decoction) and <i>Baladi Yoga</i> (a poly-herbo-mineral formulation), while the placebo group received <i>Godhuma Vati</i> (a tablet prepared with wheat powder) and saline water as an enema	<i>Mustadi Rajayapana Basti</i> and <i>Baladi Yoga</i> proved to be more supportive in improving motor activities and gross behavioral pattern. Further clinical trials are required to evaluate and validate the maximum effect of the combination therapy in a large sample with repetition of the courses for longer duration. ^[27]
10.	Rajput and Patni	Randomized Clinical Trial to Evaluate the Efficacy of <i>Ashtamangal Ghrita</i> Oral and <i>Nasya</i> in the Management of CP	2020	Children with physical and mental developmental disabilities of age group 01–10 years of either sex were randomly divided into two groups, group A received <i>Ashtamangal ghrita</i> (orally) - 1 mL/kg body weight in two divided doses for 3 months and Group B received <i>Pratimarsh Nasya</i> with <i>Ashtamangal ghrita</i> – two drops in each nostril 2 times a day for 3 months	Clinical efficacy of both <i>Ashtamangal ghrita</i> orally and as <i>nasya</i> on various parameters of CP showed that both were effective, safe, and comparable. ^[28]

(Contd...)

Table 1: (Continued)

S. No.	Author	Study	Year	Methodology	Result
11.	Rathi <i>et al.</i>	Comparative Efficacy of Therapeutic Panchakarma Procedures Alternate <i>Brimhan-Rukshan</i> Versus only <i>Brimhan</i> in Children with CP	2023	Patients fulfilling the diagnostic criteria were included and randomly distributed into two groups of 10 each. Group A was given <i>Brimhan</i> procedures such as <i>Talapothichil/Shiropichu</i> , <i>Annalepan</i> , <i>Pindswed</i> , <i>Tailadhara</i> and <i>MatraBasti</i> for 3 days followed by <i>Rukshan</i> procedures such as <i>Talapothichil/Shirolepan</i> , <i>Udgharshan</i> , <i>Kwathdhara</i> , <i>Patrapottali</i> , and <i>Niruh Basti</i> for next 3 days alternate 5 cycles starting and end with <i>Brimhan</i> in total 15 days and 15 days follow-up for 3 consecutive months. Group B received only <i>Brimhan</i> procedures for the same pattern and duration. Three such courses were administered to both Groups with an interval of 15 days along with necessary symptomatic treatment, physiotherapy and occupational therapy	Multiple interventions are essential in the management of CP. Alternate <i>Brimhan-Rukshan Panchakarma</i> procedures are more beneficial with physiotherapy and occupational therapy as CP has <i>Vata-Kapha Dosha</i> dominance. ^[29]
12.	Arun Raj <i>et al.</i>	Comparative clinical study to assess the effectiveness of <i>Salavana Upanaha Sweda</i> with and without <i>Parisheka</i> on spasticity in children with CP	2022	Diagnosed cases of Spastic CP were selected for the study based on the diagnostic criteria and inclusion criteria, later divided into two groups— <i>Parisheka Upanaha</i> group (PUG) and <i>Upanaha</i> group (UG). The subjects in PUG were administered both <i>Parisheka</i> and <i>Upanaha</i> while those in UG with <i>Upanaha</i> only. The duration of the study was 90 days, in consecutive 3 sittings of 15 days each with a gap of another 15 days	Even though both groups were found to be effective in reducing Spasticity based on objective and subjective parameters, a better effect was seen in <i>Upanaha</i> along with the <i>Parisheka</i> group when compared to the <i>Upanaha</i> alone group. ^[30]