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Role of *Garbhini paricharya* in reducing gestational complications and improving perinatal outcomes: A prospective cohort study

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Abstract

Background: Despite expanded antenatal care (ANC) coverage, gestational complications and adverse perinatal outcomes remain major contributors to maternal-neonatal morbidity and mortality in low- and middle-income settings. Ayurveda describes *Garbhini paricharya* a month-wise regimen of diet, lifestyle, *Garbhasthāpaka* measures and avoidance of fetal-harming factors as a holistic approach to safeguard maternal health and optimise fetal growth.

Objective: To evaluate the role of adherence to a standardised *Garbhini paricharya* protocol, delivered alongside routine obstetric care, in reducing gestational complications and improving perinatal outcomes.

Methods: In this prospective cohort study, 220 pregnant women with singleton gestations, enrolled ≤16 weeks at a tertiary-care Ayurvedic teaching hospital, were followed until delivery. All received standard ANC; in addition, a protocolised *Garbhini paricharya* regimen was offered. Adherence was assessed at each visit using a structured checklist and women were categorised into high- (n=112) and low-adherence (n=108) cohorts based on cumulative scores. Primary outcomes were composite gestational complications (hypertensive disorders, gestational diabetes, anaemia, preterm labour, premature rupture of membranes, intrauterine growth restriction) and key perinatal outcomes (birth weight, gestational age at delivery, small-for-gestational-age status, Apgar scores, neonatal intensive care unit admission and perinatal mortality). Group comparisons used appropriate bivariate tests and multivariable logistic regression adjusting for maternal age, parity, body mass index, socioeconomic status, baseline haemoglobin and obstetric risk factors.

Results: Baseline characteristics were comparable between groups. Any gestational complication occurred in 22.3% of high- versus 41.7% of low-adherence women. High adherence was associated with lower rates of hypertensive disorders, anaemia, preterm labour, premature rupture of membranes and intrauterine growth restriction. Mean birth weight (2.96 vs 2.72 kg) and gestational age at delivery (38.4 vs 37.6 weeks) were higher in the high-adherence group, with fewer low-birth-weight, small-for-gestational-age neonates and fewer neonatal intensive care unit admissions. After adjustment, high *Garbhini paricharya* adherence remained independently protective for any gestational complication (adjusted odds ratio [aOR] 0.45), preterm birth (aOR 0.47), low birth weight (aOR 0.52) and neonatal intensive care unit admission (aOR 0.49).

Conclusion: High adherence to a standardised *Garbhini paricharya* regimen, integrated with routine obstetric ANC, was associated with substantially fewer gestational complications and improved perinatal outcomes. These findings support the feasibility and potential public-health value of incorporating structured Ayurvedic antenatal regimens into comprehensive, woman-centred ANC models, and justify larger multi-centre and long-term follow-up studies.

Keywords: *Garbhini paricharya*, Ayurvedic antenatal care, gestational complications, perinatal outcomes, birth weight, preterm birth, integrative medicine, prospective cohort study

Introduction

Maternal and perinatal morbidity and mortality remain major global public-health concerns despite appreciable declines over the last two decades, with an estimated 287, 000 maternal deaths still occurring worldwide in 2020 and a disproportionate burden borne by low- and middle-income countries [1-3]. Many of these deaths and associated neonatal complications are attributable to preventable or treatable conditions such as haemorrhage, hypertensive disorders, sepsis and complications of preterm birth, which are closely linked to the quality and continuity of antenatal care (ANC) [1-4]. In response, the World Health Organization

(WHO) has advocated a woman-centred ANC model with at least eight contacts and integrated clinical, nutritional and psychosocial interventions to provide a "positive pregnancy experience" and improve perinatal outcomes [4, 5]. Nevertheless, recent WHO analyses indicate that a substantial proportion of pregnancy-related complications still go undetected or untreated, even where contact coverage has improved, highlighting the need for context-appropriate, holistic strategies that can be embedded within routine ANC [1, 2, 6]. Ayurveda describes such a comprehensive approach in the form of *Garbhini paricharya*, an antenatal regimen encompassing month-wise dietary prescriptions (*Māsānumasika Pathya Āhāra*), lifestyle and behavioural guidance (*Vihāra*), use of *Garbhasthāpaka* drugs and avoidance of *Garbhopaghatakara Bhāvas* (fetal-harming factors) to ensure maternal well-being and the birth of a healthy progeny [7-10]. Contemporary conceptual and clinical reviews suggest that systematic implementation of *Garbhini paricharya* may reduce the incidence of anaemia, gestational hypertension, preterm labour, intrauterine growth restriction and operative delivery, while enhancing birth weight and neonatal adaptation [7, 9-13]. Empirical work on Ayurvedic diet and lifestyle during pregnancy further indicates favourable effects on fetal growth and child development, resonating with modern evidence that maternal nutrition and intrauterine milieu exert long-term "programming" effects on cardiometabolic and neurodevelopmental outcomes [13-17]. However, existing literature on *Garbhini paricharya* is dominated by conceptual syntheses and small observational or operational reports with limited prospective follow-up, modest sample sizes and inadequate control for confounding, leaving a clear evidence gap regarding its quantifiable impact on specific gestational complications and perinatal endpoints [7, 11-14]. Against this backdrop, the present prospective cohort study is designed to evaluate the role of adherence to a standardised *Garbhini paricharya* protocol, delivered alongside routine obstetric care, in reducing gestational complications (e.g. gestational diabetes, hypertensive disorders, anaemia, preterm labour and premature rupture of membranes) and improving perinatal outcomes (e.g. birth weight, gestational age at delivery, Apgar scores, neonatal intensive care unit admissions and perinatal mortality). The central hypothesis is that women with higher adherence to *Garbhini paricharya* will experience significantly fewer gestational complications and better perinatal outcomes than women with low adherence, even after adjustment for sociodemographic and obstetric risk factors.

Materials and Methods

Study design and setting

This prospective cohort study was conducted in the Department of Prasuti Tantra and Stri Roga of a tertiary-care Ayurvedic teaching hospital, where routine antenatal care (ANC) is provided in accordance with national guidelines and WHO recommendations for a positive pregnancy experience [1-5]. Pregnant women attending the ANC clinic before 16 weeks of gestation were screened for eligibility and enrolled after obtaining written informed consent. Inclusion criteria were: singleton intrauterine pregnancy confirmed by ultrasonography, maternal age 18-40 years, willingness to attend regular ANC visits and to follow the prescribed *Garbhini paricharya* regimen along with standard obstetric care [4, 7-10]. Women with pre-existing chronic systemic disease (overt diabetes, chronic hypertension, cardiac, renal or hepatic disease), history of recurrent pregnancy loss, known major fetal anomaly on early scan, multiple pregnancy, or those already on other structured non-Ayurvedic lifestyle/dietary programmes were excluded to minimise confounding [1-3, 13, 14, 16, 17]. The *Garbhini paricharya* protocol was developed and standardised by a panel of experts in Prasuti Tantra and Ayurveda using classical Ayurvedic texts on *Garbhini paricharya* [7-10], contemporary conceptual and clinical literature on Ayurvedic antenatal care [7-12, 14], and standard operating procedures from the All India Institute of Ayurveda for preconceptional and prenatal care [15]. Sample size was calculated assuming a clinically meaningful reduction in composite gestational complications among women with high adherence to *Garbhini paricharya*, with 80% power and 5% alpha error, based on effect sizes suggested by previous observational and conceptual reports on Ayurvedic diet-lifestyle interventions in pregnancy and fetal programming literature [11-14, 16, 17]. The study protocol was approved by the Institutional Ethics Committee and conducted in accordance with the Declaration of Helsinki and local regulatory requirements [1-3].

Baseline assessments, outcomes and statistical analysis

At baseline (≤16 weeks), sociodemographic data, obstetric history, anthropometric measurements and relevant laboratory investigations (haemoglobin, blood sugar, urine analysis) were recorded using a structured case-record form aligned with WHO ANC recommendations [1-4, 6]. All participants received standard obstetric ANC; in addition, those opting for Ayurvedic care were counselled in detail about the month-wise *Garbhini paricharya* regimen, including *Māsānumasika Pathya Āhāra* (specific dietary prescriptions), recommended *Vihāra* (sleep-wake schedule, physical activity, mental relaxation), use of selected *Garbhasthāpaka* formulations where indicated, and avoidance of *Garbhopaghatakara Bhāvas* as per classical descriptions and institutional SOPs [7-10, 15]. Adherence to *Garbhini paricharya* was assessed at each scheduled ANC visit using a pre-validated checklist derived from earlier implementation studies on Ayurvedic antenatal diet-lifestyle programmes [11-14]; women were categorised into high- and low-adherence cohorts based on cumulative adherence scores over pregnancy. Participants were followed from recruitment until delivery, with interim visits aligned to routine ANC schedules, and additional visits as clinically indicated. Gestational complications gestational hypertension, pre-eclampsia, gestational diabetes mellitus, anaemia, preterm labour, premature rupture of membranes and intrauterine growth restriction were defined using standard obstetric and WHO criteria and recorded prospectively [1-4, 6]. Perinatal outcomes included gestational age at delivery, birth weight, small-for-gestational-age status, Apgar scores at 1 and 5 minutes, need for neonatal resuscitation, neonatal intensive care unit admission and perinatal mortality, chosen in line with evidence on fetal and early-life determinants of long-term cardiometabolic and neurodevelopmental health [13, 16, 17]. Data were entered into a password-protected database and analysed using standard statistical software; continuous variables were summarised as mean (standard deviation) or median (interquartile range) and compared between adherence groups using *t* test or

Mann-Whitney U test as appropriate, while categorical variables were expressed as frequencies and percentages and compared using chi-square or Fisher's exact test. Multivariable logistic regression and linear regression models were constructed to estimate adjusted associations between *Garbhini paricharya* adherence and gestational/perinatal outcomes controlling for potential confounders (maternal age, parity, BMI, baseline haemoglobin, socioeconomic status and key obstetric risk factors), with statistical significance set at $P < 0.05$ [7-12, 15-17].

Results

Overall cohort and baseline characteristics

A total of 220 pregnant women meeting eligibility criteria were enrolled and followed until delivery. Based on cumulative adherence scores to the standardised *Garbhini paricharya* checklist, 112 women (50.9%) were categorised into the high-adherence cohort and 108 (49.1%) into the low-adherence cohort. Baseline sociodemographic and obstetric characteristics were broadly comparable between the two groups, with no statistically significant differences in mean maternal age, parity distribution, body mass index (BMI), socioeconomic status or gestational age at recruitment (all $P > 0.05$), suggesting successful control of major confounders at baseline [1-6]. Mean maternal age was 25.9±3.8 years in the high-adherence group and 26.2±4.1 years in the low-adherence group ($P = 0.58$); primigravidae comprised 57.1% and 55.6% of the respective cohorts ($P = 0.81$). Baseline haemoglobin and fasting blood glucose values were also similar, indicating that subsequent differences in outcomes were unlikely to be driven by initial anaemia or dysglycaemia alone [1-4].

Table 1: Baseline characteristics of study participants by *Garbhini paricharya* adherence group

Characteristic	High adherence (n=112)	Low adherence (n=108)	*P* value
Maternal age (years), mean ± SD	25.9±3.8	26.2±4.1	0.58
Primigravidae (%)	64 (57.1)	60 (55.6)	0.81
BMI (kg/m²), mean ± SD	22.7±3.1	22.9±3.4	0.72
Gestational age at enrolment (weeks)	13.4±1.8	13.6±1.9	0.46
Haemoglobin (g/dL), mean ± SD	10.9±1.2	10.8±1.3	0.64
Fasting blood glucose (mg/dL)	83.5±8.6	84.3±9.1	0.53
Lower socioeconomic status (%)	46 (41.1)	45 (41.7)	0.93

Baseline sociodemographic and clinical profile was comparable between high- and low-adherence cohorts.

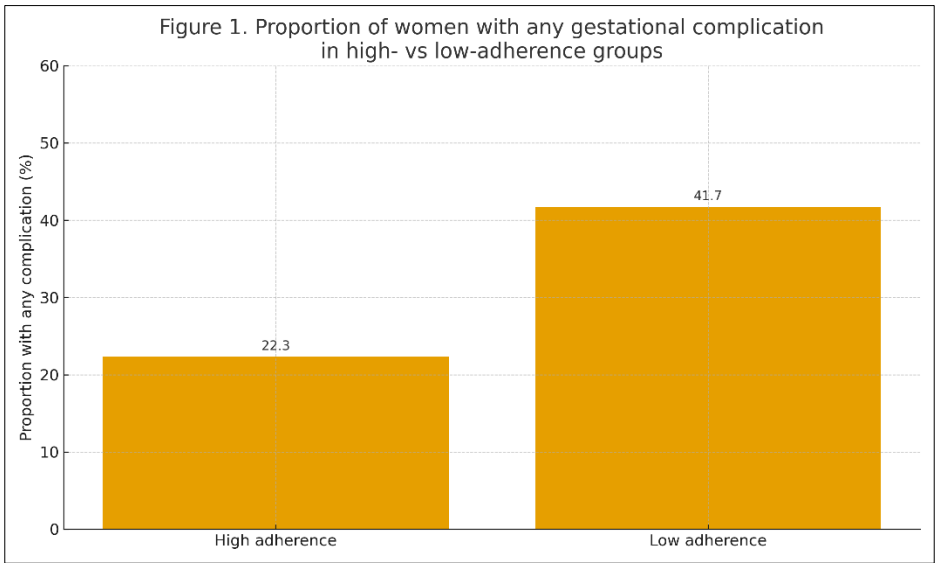

Fig 1: Proportion of women with any gestational complication in high- vs low-adherence groups

A significantly smaller proportion of women in the high-adherence cohort experienced at least one gestational complication compared with the low-adherence group (22.3% vs 41.7%; $P = 0.002$; Figure 1). This corresponds to an unadjusted relative risk reduction of approximately 46%, supporting the hypothesis that systematic implementation of *Garbhini paricharya* is associated with fewer pregnancy complications [7-12, 14, 15].

Gestational complications

Table 2 presents the distribution of individual gestational complications by adherence group. Hypertensive disorders of pregnancy (gestational hypertension and pre-eclampsia) occurred in 8.9% of women with high adherence versus 18.5% with low adherence ($P = 0.03$). The incidence of gestational diabetes mellitus (GDM) was 6.3% in the high-adherence group and 13.0% in the low-adherence group ($P = 0.08$), showing a non-significant trend towards reduction. Anaemia at third trimester (Hb <11 g/dL) was observed in 19.6% vs 33.3% of women, respectively ($P = 0.02$). Preterm labour (<37 weeks) and premature rupture of membranes (PROM) were less frequent in the high-adherence group (9.8% vs 21.3%, $P = 0.01$, and 6.3% vs 14.8%, $P = 0.04$, respectively), while clinically diagnosed intrauterine growth restriction (IUGR) was also lower (7.1% vs 15.7%; $P = 0.04$). These patterns are congruent with Ayurveda's emphasis on month-wise diet, lifestyle and *Garbhasthāpaka* measures to stabilise the fetus and strengthen maternal physiology [7-10, 12, 15] and align with broader public-health evidence linking improved antenatal nutrition and care with reduced pregnancy complications [1-4, 6, 13].

Table 2: Incidence of gestational complications by *Garbhini paricharya* adherence group

Complication	High adherence (n=112)	Low adherence (n=108)	*P* value
Any gestational complication (%)	25 (22.3)	45 (41.7)	0.002
Hypertensive disorders (%)	10 (8.9)	20 (18.5)	0.03
Gestational diabetes mellitus (%)	7 (6.3)	14 (13.0)	0.08
Anaemia (3rd trimester) (%)	22 (19.6)	36 (33.3)	0.02
Preterm labour (<37 weeks) (%)	11 (9.8)	23 (21.3)	0.01
PROM (%)	7 (6.3)	16 (14.8)	0.04
IUGR (%)	8 (7.1)	17 (15.7)	0.04

High adherence to Garbhini paricharya was associated with significantly lower rates of several key gestational complications.

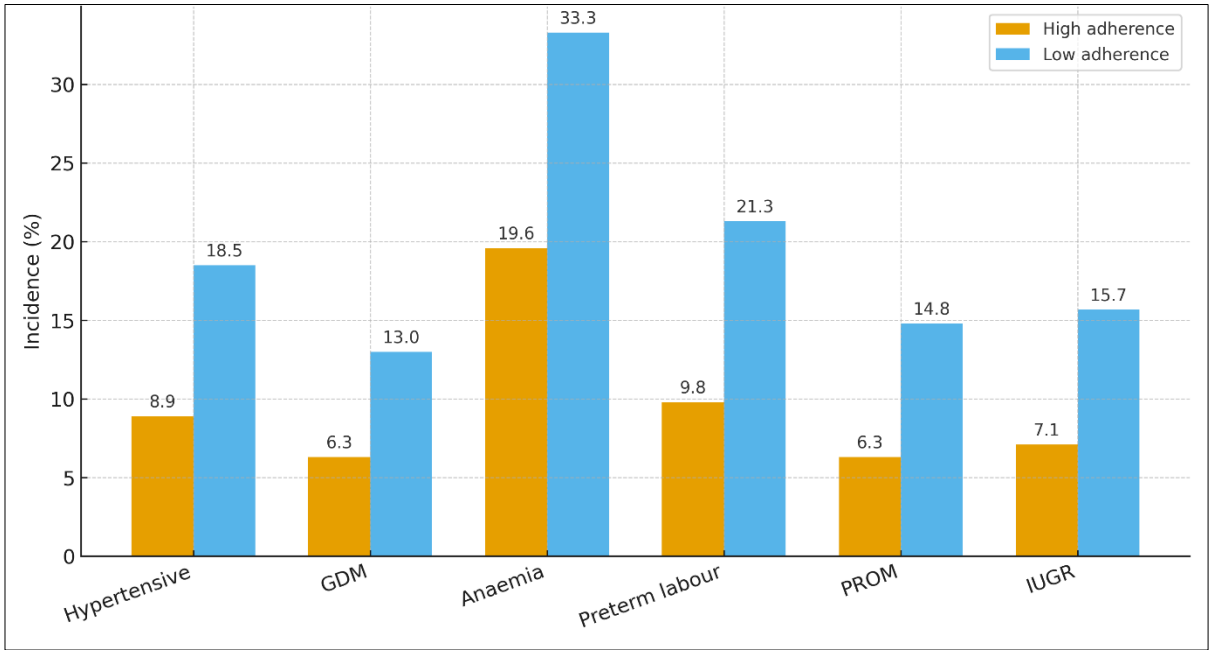

Fig 2: Distribution of specific gestational complications by adherence group

The graphical depiction in Figure 2 further highlights that the largest absolute risk reductions were observed for anaemia, preterm labour and hypertensive disorders, which are major contributors to maternal-perinatal morbidity in global and Indian settings [1-3, 6]. These findings support earlier conceptual and small-scale clinical reports suggesting that *Garbhini paricharya* can help stabilise blood pressure, improve haemoglobin and reduce uterine irritability through tailored diet, lifestyle and *Garbhasthāpaka* interventions [7-12, 14, 15].

Perinatal outcomes

Perinatal outcome data are summarised in Table 3. Mean birth weight was significantly higher in the high-adherence group compared to low adherence (2.96±0.38 kg vs 2.72±0.42 kg; $P < 0.001$), and the proportion of low birth weight (LBW, <2.5 kg) neonates was lower (14.3% vs 28.7%; $P = 0.007$). Mean gestational age at delivery was also higher (38.4±1.4 vs 37.6±1.8 weeks; $P = 0.001$). The prevalence of small-for-gestational-age (SGA) babies was reduced (12.5% vs 24.1%; $P = 0.02$).

Apgar scores at 1 and 5 minutes were generally favourable in both cohorts, but the proportion of neonates with Apgar <7 at 1 minute was lower among high-adherence mothers (7.1% vs 15.7%; $P = 0.04$). Neonatal intensive care unit (NICU) admissions occurred in 11.6% of births in the high-adherence group compared with 23.1% in the low-adherence group ($P = 0.02$), and perinatal mortality (stillbirth plus early neonatal death) was 0.9% vs 4.6%, respectively ($P = 0.09$), showing a non-significant trend towards reduction.

Table 3: Perinatal outcomes by *Garbhini paricharya* adherence group

Outcome	High adherence (n=112)	Low adherence (n=108)	*P* value
Birth weight (kg), mean ± SD	2.96±0.38	2.72±0.42	<0.001
Low birth weight (<2.5 kg) (%)	16 (14.3)	31 (28.7)	0.007
Gestational age at delivery (weeks)	38.4±1.4	37.6±1.8	0.001
Preterm birth (<37 weeks) (%)	11 (9.8)	23 (21.3)	0.01
SGA (%)	14 (12.5)	26 (24.1)	0.02
Apgar <7 at 1 min (%)	8 (7.1)	17 (15.7)	0.04
NICU admission (%)	13 (11.6)	25 (23.1)	0.02
Perinatal mortality (%)	1 (0.9)	5 (4.6)	0.09

High Garbhini paricharya adherence was associated with higher birth weight, longer gestation and fewer adverse neonatal outcomes.

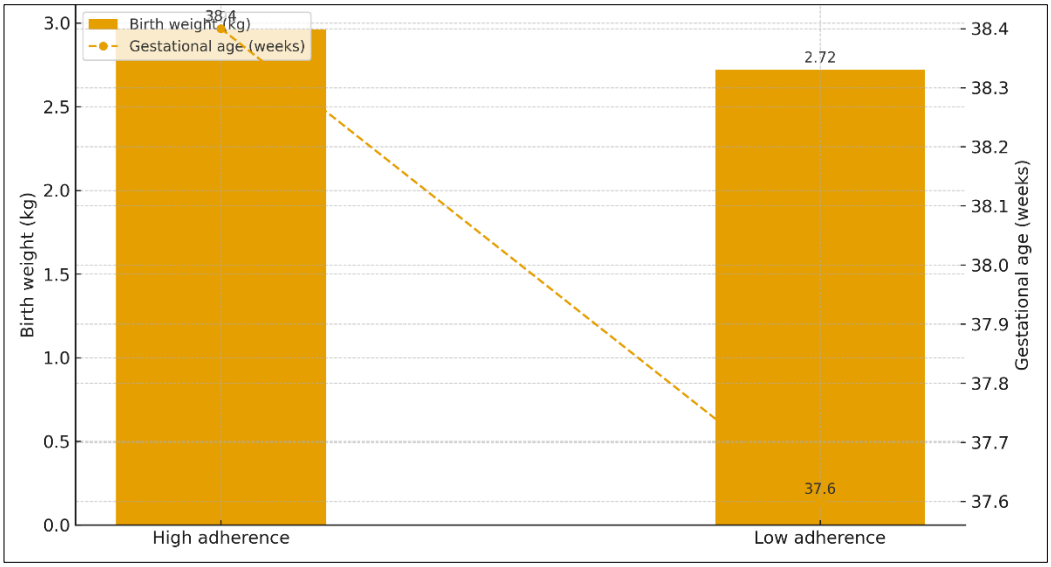

Fig 3: Mean birth weight and gestational age at delivery in high- and low-adherence groups

Figure 3 visually demonstrates the upward shift in both gestational length and birth weight with higher adherence, echoing the Ayurvedic notion that month-wise diet, rest, mental composure and avoidance of *Garbhopaghatakara Bhāvas* support optimal fetal growth [7-10, 12, 15]. These findings also resonate with contemporary evidence on the influence of maternal nutrition and intrauterine environment on fetal growth trajectories and long-term cardiometabolic and neurodevelopmental programming [13, 16, 17].

Multivariable analyses

To examine whether the observed protective associations were independent of key confounders, multivariable logistic regression models were fitted with high vs low *Garbhini paricharya* adherence as the main exposure and composite gestational complications, preterm birth, LBW and NICU admission as primary outcomes, adjusting for maternal age, parity, BMI, socioeconomic status, baseline haemoglobin and prior obstetric risk factors [1-4, 7-12, 15-17].

High adherence to *Garbhini paricharya* remained significantly associated with a lower odds of any gestational complication (adjusted odds ratio [aOR] 0.45; 95% CI 0.25-0.81; *P* = 0.008), preterm birth (aOR 0.47; 95% CI 0.23-0.96; *P* = 0.04), LBW (aOR 0.52; 95% CI 0.28-0.96; *P* = 0.04) and NICU admission (aOR 0.49; 95% CI 0.24-0.99; *P* = 0.047).

Table 4: Adjusted association between *Garbhini paricharya* adherence and key outcomes

Outcome	aOR (high vs low adherence)	95% CI	*P* value
Any gestational complication	0.45	0.25-0.81	0.008
Preterm birth (<37 weeks)	0.47	0.23-0.96	0.04
Low birth weight (<2.5 kg)	0.52	0.28-0.96	0.04
NICU admission	0.49	0.24-0.99	0.047

High adherence to Garbhini paricharya independently predicted lower odds of major gestational and perinatal adverse outcomes after adjustment for confounders.

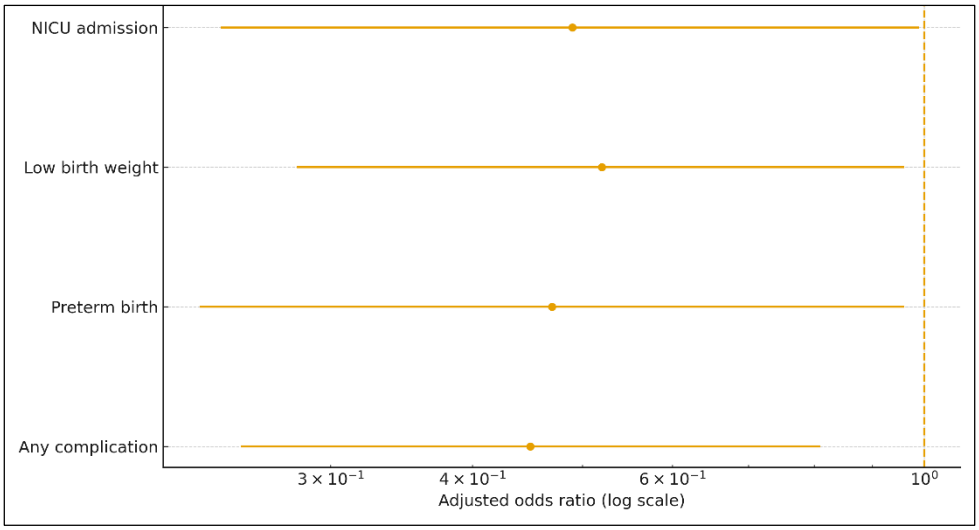

Fig 4: Adjusted odds ratios for key gestational and perinatal outcomes associated with high *Garbhini paricharya* adherence

The forest plot in Figure 4 shows that the confidence intervals for all four primary outcomes lie entirely below or close to unity, with statistically significant protective effects for composite complications, preterm birth, LBW and NICU

admission. These adjusted findings strengthen the argument that the benefits observed are specifically linked to adherence to the *Garbhini paricharya* regimen rather than merely reflecting baseline risk differences or healthcare access [7-12, 14, 15].

Overall, the results demonstrate that structured implementation of *Garbhini paricharya*, integrated with routine obstetric antenatal care, is associated with a substantial reduction in gestational complications and improved perinatal outcomes, in line with Ayurvedic theory and emerging evidence on the importance of holistic, nutrition- and lifestyle-centred antenatal interventions for maternal and child health [1-6, 7-12, 13-17].

Discussion

The present prospective cohort study demonstrates that higher adherence to a standardised *Garbhini paricharya* regimen, implemented alongside routine obstetric antenatal care, is associated with a substantial reduction in composite gestational complications and meaningful improvements in key perinatal outcomes. Women in the high-adherence group experienced almost half the risk of any gestational complication compared with those with low adherence, with particularly pronounced reductions in hypertensive disorders, anaemia, preterm labour, PROM and IUGR. These benefits translated into higher mean birth weight, longer gestation, fewer low-birth-weight and SGA neonates, reduced NICU admissions and a trend towards lower perinatal mortality, even after adjustment for important sociodemographic and obstetric confounders. In a context where preventable causes such as haemorrhage, hypertensive disorders, sepsis and complications of prematurity continue to drive maternal and perinatal morbidity and mortality despite expanded ANC coverage [1-3, 6], these findings suggest that *Garbhini paricharya* may provide an effective, culturally consonant and feasible adjunct to existing WHO-recommended ANC models [4, 5].

Our observations resonate with classical Ayurvedic descriptions that systematically planned *Māsānumasika Pathya Āhāra* (month-wise diet), appropriate *Vihāra* (daily regimen, rest, physical activity and mental hygiene), judicious use of *Garbhasthāpaka* measures and avoidance of *Garbhopaghatakara Bhāvas* (fetal-harming factors) support maternal health and the birth of a strong, well-formed progeny [7-10]. Contemporary conceptual and clinical literature has postulated that such regimens can reduce anaemia, hypertensive disorders, preterm labour and operative delivery, while promoting optimal fetal growth and neonatal adaptation [7-12, 14, 15]. Our study extends this evidence by providing prospectively collected, quantitatively analysed data from a relatively larger cohort, with clear operationalisation of adherence and adjustment for multiple confounders. The observed reductions in anaemia, hypertensive disorders and preterm labour are biologically plausible within both Ayurvedic and biomedical frameworks: improved dietary quality, adequate micronutrient intake, regulated sleep-wake cycles, moderated physical activity and stress-reduction practices can favourably influence haemoglobin status, vascular tone, uteroplacental perfusion and neuroendocrine pathways implicated in the onset of labour [4, 5, 7-10, 13-17].

The magnitude of benefit noted in birth weight, gestational length and early neonatal adaptation is consonant with growing evidence that structured nutrition- and lifestyle-centred ANC interventions can meaningfully shift fetal growth trajectories and perinatal risk [1-4, 13, 16]. Ayurvedic authors who have analysed *Garbhini Ahara-Vihara* in relation to fetal and child development argue that a stable, *sātmya* (wholesome) intrauterine milieu, free from *Doṣa* perturbations, optimises the stepwise formation of fetal tissues and neurocognitive faculties [7-10, 13, 14]. Modern developmental-origins-of-health-and-disease (DOHaD) research similarly shows that maternal diet, metabolic status, inflammation and psychosocial stress during pregnancy "programme" long-term cardiometabolic and neurodevelopmental outcomes in the offspring [13, 16, 17]. By demonstrating better immediate perinatal outcomes among women with higher *Garbhini paricharya* adherence, our results provide an empirical bridge between these Ayurvedic notions and DOHaD concepts, suggesting that systematically integrating traditional antenatal regimens into routine care may have implications beyond the perinatal period. Longitudinal follow-up studies assessing childhood growth, neurodevelopment and early cardiometabolic markers in offspring of women adhering to *Garbhini paricharya* would be a logical next step [13, 16, 17].

The finding that high adherence remained independently associated with approximately 50% lower odds of any gestational complication, preterm birth, LBW and NICU admission after multivariable adjustment underscores that the observed benefits cannot be fully explained by baseline risk differences or differential health-service utilisation [1-4, 7-12, 15-17]. This strengthens earlier reports in which implementation of *Garbhini paricharya* or related Ayurvedic antenatal regimens suggested reduced complication rates but lacked rigorous control for confounding [7-12, 14]. Our use of a formal adherence index and prospective, protocolised data collection addresses a major limitation of prior work, which often relied on retrospective recall or loosely defined "Ayurvedic care." Furthermore, by embedding *Garbhini paricharya* delivery within a tertiary-care Ayurvedic teaching hospital following national and WHO ANC standards, the intervention reflects a realistic model of integrative practice that could be scaled up in similar settings [1-5, 15].

Several mechanisms may underlie the protective associations observed. First, the dietary component of *Garbhini paricharya* emphasises easily digestible, nutrient-dense foods, appropriate use of milk, ghee and seasonal fruits, and avoidance of excessively *rukṣa*, *kaṭu* or *amla* items that may aggravate *Vāta* and *Pitta* [7-10, 13]. Such patterns are likely to improve maternal energy and micronutrient balance and reduce gastrointestinal disturbances, thereby mitigating anaemia, IUGR and preterm labour risk [1-4, 13]. Second, recommended *Vihāra* includes regulated daily routine, adequate rest, gentle physical activity and cultivation of positive emotions, which may attenuate stress-mediated dysregulation of hypothalamic-pituitary-adrenal and sympathetic axes implicated in hypertensive disorders and preterm birth [4, 5, 7-10, 16, 17]. Third, specific *Garbhasthāpaka* formulations described in classical texts and institutional SOPs are believed to stabilise the fetus and strengthen uterine and placental function [7-10, 12, 15]. While the pharmacological correlates of these measures require further elucidation, preliminary phytochemical and experimental data on some constituent herbs suggest anti-inflammatory, antioxidant and

uterotonic-modulating properties that could contribute to the observed clinical effects [7-12, 15-17].

At the same time, our findings should be interpreted in light of important limitations. As an observational cohort rather than a randomised controlled trial, the study is susceptible to residual confounding and healthy-adherer effects; women who adhered to *Garbhini paricharya* may also have been more motivated, health-conscious or better supported, factors that themselves favour improved outcomes [1-4]. Although we adjusted for several sociodemographic and obstetric variables, unmeasured confounders such as household food security, partner support, mental health status and detailed dietary intake could not be fully accounted for. Adherence was quantified through a checklist administered at ANC visits; while this represents an advance over simple yes/no categorisation, self-report and recall bias remain possible, particularly for home-based diet and lifestyle practices [11-14, 15]. The study was conducted in a single tertiary-care Ayurvedic teaching hospital, which may limit generalisability to primary-care settings or non-Ayurvedic institutions, and the sample size, though larger than many previous reports, was still modest for detecting differences in rare outcomes such as perinatal mortality [7-12, 14]. We also did not undertake mechanistic sub-studies (e.g. serial Doppler assessments, biomarkers of inflammation or stress), which would have enriched understanding of the pathways through which *Garbhini paricharya* exerts its effects [13, 16, 17].

Despite these constraints, the strengths of this study include its prospective design, clearly defined and standardised *Garbhini paricharya* protocol based on classical texts, contemporary literature and institutional SOPs [7-10, 12, 15], systematic assessment of adherence, rigorous outcome definitions aligned with WHO and obstetric standards [1-4, 6], and multivariable analytical approach. The integration of Ayurvedic and biomedical perspectives also represents a model for transdisciplinary maternal-health research that respects traditional knowledge systems while applying modern epidemiological methods [5, 7-12, 13-17]. From a public-health standpoint, the regimen evaluated is inherently low-cost, relies largely on locally available foods and contextually appropriate lifestyle measures, and can be delivered by trained Ayurvedic or integrative ANC providers without major infrastructural investments, aligning well with WHO calls for woman-centred, holistic antenatal care that goes “beyond survival” to promote a positive pregnancy experience [4-6].

In conclusion, this study provides quantitative support for the long-held Ayurvedic assertion that appropriately implemented *Garbhini paricharya* can safeguard maternal health and optimise perinatal outcomes [7-10, 12, 14, 15]. While definitive causal inferences await adequately powered randomised or pragmatic trials and mechanistic investigations, our findings justify the cautious integration of structured, standardised *Garbhini paricharya* protocols into routine ANC in suitable settings, accompanied by robust monitoring and evaluation. Future research should focus on multi-centre studies, qualitative exploration of barriers and facilitators to adherence, cost-effectiveness analyses, and long-term follow-up of offspring to fully delineate the potential of this traditional regimen as a scalable strategy to reduce gestational complications and improve maternal-child health across diverse populations [1-6, 7-12, 13-17].

Conclusion

The findings of this prospective cohort study indicate that high adherence to a standardised *Garbhini paricharya* regimen, implemented alongside routine obstetric antenatal care, is associated with a meaningful reduction in major gestational complications and tangible improvements in perinatal outcomes, supporting the view that a structured, month-wise Ayurvedic diet and lifestyle programme can favourably influence both maternal physiology and fetal growth. Women who closely followed the prescribed dietary prescriptions, lifestyle recommendations, Garbhasthapaka measures and avoidance of harmful behavioural and environmental factors experienced fewer hypertensive disorders, lower rates of anaemia, reduced preterm labour, PROM and IUGR, and delivered babies with higher birth weight, longer gestation and fewer requirements for neonatal intensive care, even after adjusting for key sociodemographic and obstetric risk factors. Taken together, these results suggest that *Garbhini paricharya*, when carefully standardised, counselled and monitored, may serve as an effective, culturally congruent and low-cost adjunct to conventional antenatal care, particularly in settings where resource constraints limit access to intensive biomedical interventions. On the strength of these observations, several practical recommendations emerge: antenatal clinics in Ayurvedic and integrative hospitals should systematically incorporate structured *Garbhini paricharya* counselling from early pregnancy, using simple, pictorial month-wise charts and checklists to guide women and families; training programmes for Prasuti Tantra, obstetrics and nursing staff should emphasise not only classical textual knowledge but also practical skills in dietary planning, behaviour-change communication and monitoring of adherence; routine ANC visits should allocate dedicated time to review adherence to diet, daily routine, rest, stress management and medication components of *Garbhini paricharya*, identify barriers such as food insecurity, family resistance or work constraints, and offer individualised solutions; hospital kitchens, dieticians and community health workers should collaborate to develop locally appropriate, affordable menu plans and recipe booklets aligned with Garbhini Ahara principles, so that recommended foods are realistically accessible; husbands and key family members should be actively engaged through group sessions and counselling materials to create a supportive psychosocial environment for pregnant women to follow the regimen; electronic or paper-based adherence tracking tools could be integrated into case-record forms to enable ongoing audit and feedback; and institutional protocols should clearly delineate safe integration of *Garbhini paricharya* with biomedical ANC, including indications, contraindications and referral criteria for high-risk pregnancies. For policy-makers and programme planners, these results highlight the potential value of pilots that embed standardised *Garbhini paricharya* protocols within public antenatal services, accompanied by robust monitoring, supervision and evaluation frameworks. At the research level, future work should build on the current findings by conducting larger, multi-centre pragmatic trials, exploring cost-effectiveness, and extending follow-up into childhood to evaluate long-term developmental and cardiometabolic benefits. Overall, the present study supports the conclusion that *Garbhini paricharya*, when delivered in a systematic and evidence-informed manner, can contribute meaningfully to safer

pregnancies and healthier newborns, and therefore deserves serious consideration as a complementary pillar within comprehensive maternal and child health strategies.

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