Effect of Garbh Sanskar (Yoga) on Maternal and Perinatal Outcome

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Aims and Objectives: 'Garbh' implies embryo in the womb and 'Sanskar' implies instructing the psyche. The objective of this prospective interventional study was to assess the effects of Garbh sanskar on maternal and fetal outcomes. **Material and Methods:** A total of 200 antenatal mothers were selected at Aarogya Hospital, Vaishali, Ghaziabad and Chitra Vihar, Delhi, and asked to attend three sessions of Garbh sanskar for one 1year (Jan 2019 to Jan 2020). Information booklet and structured questionnaires were provided to assess their performance and feedback during this period. **Result:** Analysis of maternal and fetal outcome showed that out of 200 females, 20% had LSCS, 6% had an instrumental vaginal delivery and 74% had a normal vaginal delivery. Only 7% developed some medical complications like PIH, GDM etc. Mean stress score decreased from 38 to 12(by 46.4%) while mean anxiety score decreased from 40 to 8(by 64%) after Garbh Sanskar. Only 16% of babies were LBW (< 2.5 kg), 88% had Apgar >7 and 6% of neonates required NICU admission. **Conclusion:** Garbh Sanskar is highly effective in reducing maternal stress, anxiety, medical co-morbidities and incidence of operative deliveries and gives better neonatal outcomes in terms of better growth, birth weight and Apgar, hence its practice must be encouraged.

Keywords: Garbh Sanskar, Maternal, Fetal Outcome

Introduction

The process of selecting and transmitting positive influences to the fetus using yoga, reading, thinking and praying including healthy eating and cheerful behaviour of the mother is known as Garbh Sanskar. A good nutritional status maintained by the mother during pregnancy helps to grow a strong, healthy placenta, which determines the birth weight and future health of the baby in adult life [1,2]. Similarly, positive emotions like love, joy, gratitude and healthy thoughts by parent bring the growth of the unborn child in the womb of the mother, whereas negative thoughts, depression and stress injures the unborn child [3-5]. 60-70% of brain development occurs in the intrauterine period. Garbha sanskar practices are special efforts taken to stimulate a baby's senses gently so that cortical development is maximum. Hence the concept of Sanskar (good thought) imparted right from the prenatal stage i.e. when the child is in the womb of the mother is important. It has been documented that the activity of the mother during pregnancy in the form of prayer (good rational thoughts), Manshakti (positive emotion), conversation with fetus (talk) or expressing feeling (touch) is not only recognized by the unborn baby but it has positive effects on physical and mental health [6]. It increases communication and bonding with the baby, it can transmit positive thoughts, love and emotions to the fetus, to increase the likely hood of a calm, happier and healthier baby. The root of Garbha sanskar can be traced back to Abhimanyu in the era of the Mahabharata. When Arjuna's wife was pregnant with their son Abhimanyu, he told her about how to penetrate the Chakravyuh, a particular war formation. He could only learn to decode and enter the trap because by that time her mother fell asleep. This was one of the reasons why he was killed because he did not know how to come out of the trap. Also the common personality of positivity among Lord Buddha, Pralhad and Vivekanand was inculcated by a positive thought of their mother's prayer. Today, many organizations are working towards the goal of moulding the future generation through Garbha sanskar [7]. There are reports available about the practice of Garbha sanskar from Maharashtra, Gujarat and Madhya Pradesh in India, but no such activity reports from Uttar Pradesh. Hence in the light of these facts, we planned this study with the following aims and objectives.

Aims and Objectives

We aimed to study the effects of garbha sanskar on pregnancy by recording:

1) Pregnancy symptoms like nausea, vomiting, mood swings and irritability.

2) Birth outcome - baby weight, preterm/term delivery, Apgar at 1 minute, need for NICU admission.

3) Mode of delivery - FTND/FTLSCS/Assisted delivery-Forcep/ventouse.

4) Any other complication during pregnancy or labour.

5) Level of stress and anxiety before and after administration of selected aspects of Garbha Sanskar on antenatal mothers using standardised questionnaires.

6) Analysis of selected demographic variables.

Material and Methods

This study was conducted at Aarogya Hospital, Vaishali, Ghaziabad and Chitra Vihar, Delhi, Total of 200 antenatal mothers in their first trimester were selected and asked to attend Garbh sanskar sessions, one in every trimester, over 1 year (Jan 2019 to Jan 2020). The research method adopted for the study was a quantitative research approach. The research design selected for this study was a "time series design". A non - probability purposive sampling method was used for the selection of the representative samples for the study.

Inclusion Criteria: In this study, we enrolled 200 pregnant females (age=19 to 35 years) with gravidity 1-5 who were willing to attend the garbha sanskar program. Females with no previous history of any significant illness were selected.

Exclusion Criteria: Patients with a history of any other complication during pregnancy like placenta praevia, low lying placenta, multigravida with bad obstetric history, PIH, incompetent os, H/o chronic respiratory disease, H/o cardiac disease etc.

Posters were displayed as an advertising model for the recruitment of subjects. Informative pamphlets were distributed in the ANC outpatient department. A pre-test was administered to all the participants. Confidentiality was maintained. The program

Was organised on the first Saturday of every month in antenatal OPD where the trained instructors taught the patients along with their family members the various aspects of Garbh Sanskar through PowerPoint slide presentations and instructive videos. A booklet was also provided with detailed written instructions. Information was given regarding recommended daily routine for pregnant women, diet, exercises to be done, different yoga asanas that can be performed, breathing exercises (pranayama), pelvic floor exercises, meditation and patients were motivated and asked to practice them daily at their home. Doubts of mothers were cleared till they were satisfied. Post-test was administered at their last antenatal visit in OPD at around 36 weeks.

Data were collected using structured questionnaires which consisted of the following sections:

Section I: Demographic data dealt with baseline data including name, age, and education, address, working status, socioeconomic status, and religion, type of family, food habits and obstetric history.

Section II: Stress and Anxiety scores were calculated before and after Garbh sanskar sessions using standardised questionnaires: Perceived Stress Scale (PSS) [8] & Pregnancy-Related Anxiety Questionnaire- Revised2 (PRAQ-R2) [9]

Section III: Maternal outcome in terms of amelioration of pregnancy symptoms like nausea, vomiting, mood swings and irritability, exercising on daily basis, mode of delivery - FTND/FTLSCS/Assisted delivery-Forcep/ventouse, development of any other complication during pregnancy or labour.

Section IV: Perinatal outcome in terms of baby weight, preterm/term delivery, Apgar at 1 minute, need for NICU admission.

Statistical Analysis: The data was entered in Statistical Package for Social Science (SPSS) software programme and analyzed using the chi-square test.

Results

On analysis of data, the major observations are as follows:
- Age: Among 200 pregnant females, 4% mothers were in <20 years age group,

- 62% mothers (maximum) were in 21-25 year age group, 30% mothers were in 26-30 years age group, 4% mothers were in 31-35 years age. The mean age was 25.20 years.

Table 1: Demographic profile of cases.

		n	%
Age (years)	≤ 20	8	4%
	21 - 25	124	62%
	26 - 30	60	30%
	31 - 35	8	4%
	mean±sd	25.20	±3.09
Education	Illiterate	28	14%
	Primary	28	14%
	Secondary	72	36%
	Graduate	72	36%
Gravida	Primi	132	66%
	Multi	68	34%
Working status	Working	44	22%
	Housewife	156	78%
Socio Economic status	Lower	56	28%
	Middle	92	46%
	High	52	26%
Religion	Hindu	188	94%
	Muslim	12	6%
Type of Family	Joint	136	68%
	Nuclear	64	32%
Food Habits	Vegetarian	172	86%
	Non-Vegetarian	28	14%

- Education: Among 200 mothers, 14% were illiterate, whereas out of 86% educated females 36% were graduates, 36% studied up to higher secondary and 14% were educated up to 10th standard.

- Gravidity: Out of 200 females, 66% were primigravida while 34% were multigravida.

- Employment: Out of 200 pregnant mothers, 22% were working women whereas 78% were housewives.

- Religion: Among 200 pregnant mothers, 94% were Hindu and 6% were Muslim.

- Type of Family: Among 200 expected mothers, 32 % were staying in the nuclear family whereas 68 % were staying in a joint family.

- Socioeconomic status: Among 200 pregnant mothers, 28% belonged to lower SES, 46% were from middle SES and 26% were belonging to high SES.

- Food Habits: Out of 200 pregnant mothers, 86% were vegetarian while 14% were non-vegetarian.

Stress and Anxiety level in pregnant females: As calculated from the standardised PSS questionnaire, the mean stress score pre-Garbh sanskar was 38 which was reduced to 12 post- Garbh sanskar and this change were found to be statistically significant($p<0.001$). Similarly from the PRAQ-R2 questionnaire, the mean anxiety score pre Garbh sanskar was calculated to be 40 which decreased to 7.98 in the post-test questionnaire, again found to be statistically significant($p<0.001$).

Table 2: Mean stress and anxiety scores and change after Garbh sanskar sessions.

Score		mean	±sd	p-value
Stress	Pre	38.00	±2.74	<0.001
	Post	12.00	±4.11	
	Change	26.00	±4.28	
Anxiety	Pre	40.00	±4.54	<0.001
	Post	7.98	±2.23	
	Change	32.02	±5.02	

As evident from the post-test questionnaires, out of 200 pregnant mothers, 72% reported a decrease in the incidence of mood swings and irritability after attending Garbh sanskar sessions. Among 200 mothers, 60% performed daily exercises in the form of pranayama, deep breathing exercises etc. Out of 200 mothers, 34% reported no incidence of nausea or vomiting, 46% experienced mild whereas 20% experienced moderate nausea during pregnancy. Out of 200 females, 85% developed no medical or obstetric complications throughout the pregnancy. GDM was found to be present in 3.5% of females, PIH in 3.5%, IUGR and post-dated in 2% each and oligohydramnios in 4% of females. Induction of labour was done in 8% of females. There was a spontaneous onset of labour in 92% of patients. LSCS was performed in 20% of pregnant females in view of fetal distress(8%), CPD(4%), MSL(4%), DTA(2%) and breech presentation(2%). 74% had normal vaginal delivery whereas 6% had assisted/instrumental vaginal delivery.

Because of better mother-child bonding due to Garbh sanskar sessions, 74% of females could breastfeed their babies on a postnatal day 1, 16% on day 2 whereas 10% could initiate breastfeeding on a postnatal day 3. 86% of newborn babies had an Apgar score of 9 at 1 minute. Out of 200 babies, 84% had birth weight >2.5kg with 16%

Having low birth weight (<2.5kg). Among 200 babies, 6% required NICU admission but all were stable and discharged within a week. There was no perinatal mortality in our study.

Table 3: Maternal outcome.

Mood Swings & Irritability	Less	144	72%
	Same	56	28%
Exercises	Yes No	120 80	60% 40%
Nausea/Vomiting	None Mild Moderate	68 92 40	34% 46% 20%
Medical Issues	None	170	85%
	GDM	7	3.5%
	IUGR	4	2%
	Oligohydramnios	8	4%
	PIH	7	3.5%
	Post dated	4	2%
Induction of Labour	Yes	16	8%
	No	184	92%
Mode of Delivery	IVD	12	6%
	LSCS	40	20%
	SVD	148	74%
Complications	BREECH	4	2%
	CPD	8	4%
	DTA	4	2%
	FD	16	8%
	MSL	16	8%

Table – 4: Perinatal outcome.

BF Started on a postnatal day	1	148	74%
	2	32	16%
	3	20	10%
APGAR at 1 min	6	24	12%
	8	4	2%
	9	172	86%
	mean±sd	8.62	±0.98
Baby Weight (kg)	< 2.5	33	17%
	≥ 2.5	167	84%
	mean±sd	2.79	±0.38
NICU admission	Yes	12	6%
	No	188	94%

Discussion

Ultrasound imaging and related experimental studies and analysis on the gradual stages of fetal growth have shown that the baby enjoys, tastes, hears, remembers, learns, understands, feels and also expresses joys, pain, stress etc. Research on hormones and psychology has revealed a significant impact of the mother's health and mental and emotional conditions on the child. Yoga helps

In relaxation and softening of deep inner tension and blockages, helps in mind equilibrium and stability of autonomic balance [10].

This helps pregnant mothers to tackle stress throughout pregnancy and during delivery. Symptoms like nausea, vomiting, mood swings and irritability are also in control due to yoga and garbha sanskar practices. This difference was evident in the pre and post-test questionnaires (Table I). There was a 72% decrease in the incidence of mood swings and irritability after attending Garbh sanskar sessions, 60% of mothers performed daily exercises in the form of pranayama, deep breathing exercises etc. Out of 200 mothers, 34% reported no incidence of nausea or vomiting, 46% experienced mild whereas 20% experienced moderate nausea during pregnancy. Garbha sanskar and yoga are directed towards keeping expectant mothers happy and making pregnancy a joyful experience. Stress, frustration, anger, irritation etc. produce adrenalin which can potentially have some bad effects on the baby in the uterus. Due to meditation, there is decreased adrenalin output and reduction of anxiety symptoms [11,12]. As calculated from the standardised PRAQ-R2 questionnaire, the mean anxiety score pre Garbh sanskar was calculated to be 40 which decreased to 7.98 in the post-test questionnaire. (Table 2)

Due to meditation, the hypothalamus interacts with thalamic nuclei to facilitate specific alpha waves in certain areas of the cortex and interacts with RAS to inhibit certain neural centres that act on the diffuse thalamus system. It either directly integrates autonomic and somatic activity or indirectly act on the medullary centres through RAS to produce or influence the changes seen in O2 consumption, cardiac output, heart rate, respiration rate, blood pressure and skin resistance [11, 12]. The approach and the way the patient looks at the whole of the pregnancy and labour process changes. In stressful states with the preponderance of sympathetic activity, yogic asanas and pranayama can lead to a state of reduced sympathetic activity shifting the autonomic balance towards relative parasympathetic dominance [13, 14]. As calculated from the standardised PSS questionnaire, the mean stress score pre-Garbh sanskar was 38 which was reduced to 12 post Garbh sanskar and this change was found to be statistically significant(p<0.001). (Table 2)

Pranayama and yoga work hand in hand to balance and integrate different physiological functions and to help dissolve emotional blocks and negative habit patterns that can obstruct the flow of vital energy within the body [10]. Series of events that place in the genital organs in efforts to expel the viable products of conception out of the womb through the vagina into the outer world is called labour [15]. Increased incidence of normal spontaneous labour was found in our study (92%) Induction of labour was done in 8% of females. 74% had normal vaginal delivery whereas 6% had assisted/instrumental vaginal delivery. There was no incidence of preterm delivery. If we compare the statistics with other countries, it can be seen that the incidence of normal deliveries is maximum in our study (80%) surpassing that of India followed by the UK, USA and China. We have taken incidence for private facilities in urban areas of India as our standard because our centre in this study is also an urban private hospital. We were able to limit the incidence of LSCS to 20% in our study which was performed in view of fetal distress (8%), CPD (4%), MSL (4%), DTA (2%) and breech presentation (2%).

Table – 5: Comparison of statistics around the world

S.no.	Country	Incidence Of Normal Deliveries	Incidence Of Cesarean Section	Incidence Of Lbw Babies
1	USA	68%	32%	8.2%
2	China	59.5%	41.5%	2.38%
3	UK	71	29%	2.9%
4	India: Private Facility/Urban Area Public Facility/Urban Area Overall	55.2% 80.1% 82.8%	44.8% 19.9% 17.2%	26%
5	Aarogya Hospital			
6	Our Study (After Garbh Sanskar)	80%	20%	16%

Out of 200 females, 85% developed no medical or obstetric complications throughout the pregnancy. GDM was found to be present in 3.5% of females, PIH in 3.5%, IUGR and post-dated in 2% each and oligohydramnios in 4% of females. On comparing the national incidence it was found that pooled estimate of GDM prevalence in Indian women was 9.3%. The incidence of pre-eclampsia is reported to be 8-10%. In India, the prevalence of LBW has been reported to be 26% while the proportion of IUGR is 54%, much higher than what we found in

Our study. The overall incidence of post-term pregnancies is 7%.

Yogic exercise by influencing the autonomic nervous system ensures better food utilization and improved nourishment besides proper relaxation and sleep due to superior voluntary control of a person [11]. Out of 200 babies, 84% had birth weight >2.5kg with 16% having low birth weight (<2.5kg). APGAR score is a quantitative method for assessing the infant's respiratory, circulatory and neurological status. Out of all, 86% of newborn babies had an Apgar score of 9 at 1 minute. Because of better mother-child bonding due to Garbh sanskar sessions, 74% of females could breastfeed their babies on a postnatal day 1, 16% on day 2 whereas 10% could initiate breastfeeding on a postnatal day 3. Among 200 babies, 6% required NICU admission but all were stable and discharged within a week. There was no perinatal mortality in our study.

During pregnancy, yoga exercises help in:
01. Relieving edema and leg cramps during the last trimester.

02. Influencing the position of the baby

03. Raising the level of energy while also helping in showing the metabolism to restore calm and focus.

04. Helping to reduce nausea, morning sickness and mood swings in combination with pranayama.

05. Relieves tension around the cervix and birth canal.

06. opens the pelvis to make labour easier and quicker.

07. Also in the post natal period, it restores the uterus, abdomen and pelvic floor.

08. Relieves upper back tension.

09. Helps in better Lactation

Science has proved that an intrauterine baby can not only listen, touch, feel but also can respond in its way since 60% of brain development occurs in the intrauterine period.

The observed effects of garbhasanskar and yoga on pregnant females were extremely beneficial both for mother and baby. To summarize regular practice of yoga and garbhsanskar leads to
01. Decrease in the duration of labour.

02. Decrease in the perception of pain during labor.

01. Incidence of full-term vaginal delivery is increased.

02. Pregnant females bear down more effectively.

03. Incidences of fetal distress is less as oxygen saturation is well maintained.

04. Incidences of instrumental deliveries i.e. application of forceps or ventouse etc. is reduced.

05. No incidence of PPH.

06. Lastly there is a faster involution of the uterus.

What does this study add to existing knowledge?

Thus our study demonstrated the beneficial effect of Yoga and Garbh sanskar were beneficial in increasing the pain threshold of the patient in labour. It increases the oxygen saturation of the mother and fetus. It causes the duration of labour to decrease. It decreases the chances of instrumentation and caesarian rates. Fetal outcome after delivery is improved. Labour pain is caused by the contraction of the uterine muscle and stress. Stress causes an imbalance in the uterine muscle contractions. Yoga and Garbh sanskar are acting positively in reducing the stress, thus helping the patient to bear down properly and effectively. Yoga and garbh sanskar make the attitude of the patient positive.

Conclusion

Garbh sanskar and yoga have great potential as an effective therapy to tackle stress during pregnancy and delivery. It helps in the good mental and physical development of the baby. Scope of the study: a) Should be a part of ANC treatment in government set up b) Yoga and garbhasanskar should be included as a part of the curriculum in Obstetrics and Gynaecology postings.

Reference

01. Stephenson T, Symonds ME. Maternal nutrition as a determinant of birth weight. Arch Dis Child Fetal Neonatal Ed. 2002 Jan;86(1): F4-6. *doi: 10.1136/fn.86.1.f4 [Crossref][PubMed][Google Scholar]*

02. Kramer MS. Effects of energy and protein intakes on pregnancy outcome: an overview of the research evidence from controlled

Clinical trials. Am J Clin Nutr. 1993 Nov;58(5):627-35. *doi: 10.1093/ajcn/58.5.627 [Crossref][PubMed][Google Scholar]*

03. Bansal, Mr Sajeev Kumar, and Dr Deepak Jaiswal. The era of strange learning strategies– garbh sanskar. (2012): 107. *[Crossref][PubMed][Google Scholar]*

04. Moon C, Lagercrantz H, Kuhl PK. Language experienced in utero affects vowel perception after birth: a two-country study. Acta Paediatr. 2013 Feb;102(2):156-60. *doi: 10.1111/apa.12098 [Crossref][PubMed][Google Scholar]*

05. Partanen E, Kujala T, Tervaniemi M, Huotilainen M. Prenatal music exposure induces long-term neural effects. PLoS One. 2013 Oct 30;8(10):e78946. *doi: 10.1371/journal.pone.0078946 [Crossref][PubMed][Google Scholar]*

06. . . PLoS One. 2013 Oct 30;8(10):e78946. *doi: 10.1371/journal.pone.0078946 [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar]*

07. http://www. getfitforbirth. com/thoughts-and-feelings-affect-your-unborn-baby/. *doi: 10.1371/journal.pone.0078946 [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar]*

08. http://www. garbhsanskarhome. com/articles. html. *[Crossref][PubMed][Google Scholar]*

09. van den Dries MA, Guxens M, Spaan S, Ferguson KK, Philips E, Santos S, et al. Phthalate and Bisphenol Exposure during Pregnancy and Offspring Nonverbal IQ. Environ Health Perspect. 2020 Jul;128(7):77009. *doi: 10.1289/EHP6047 [Crossref][PubMed][Google Scholar]*

10. Huizink AC, Delforterie MJ, Scheinin NM, Tolvanen M, Karlsson L, Karlsson H. Adaption of pregnancy anxiety questionnaire-revised for all pregnant women regardless of parity: PRAQ-R2. Arch Womens Ment Health. 2016 Feb;19(1):125-32. *doi: 10.1007/s00737-015-0531-2 [Crossref][PubMed][Google Scholar]*

11. A. K Jain, text book of physiology; fourth edition; volume I (2009) page-499,506,508. . *doi: 10.1007/s00737-015-0531-2 [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar]*

12. Chakrabarti, Ghosh and Sahana. Human physiology; 2nd edition 1984 page1233-1244. . *doi: 10.1007/s00737-015-0531-2 [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar]*

13. Vikram Shah , Gitanjali Shah, Suprajesathi Garbhasanskar;1 st edition 2004,page-26,69,106. . . *doi: 10.1007/s00737-015-0531-2 [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar] [Crossref][PubMed][Google Scholar]*

14. Anantharaman, V and Sarada Subrahmanyam. Physiological benefits in hatha yoga training. The yoga review 3. 1 (1983): 9-24. *[Crossref][PubMed][Google Scholar]*

15. 14. Selvamurthy W, Nayar HS, Joseph NT, Joseph S. Physiological effects of yogic practice. Nimhans journal 1. *1 (1983): 71-80 [Crossref][PubMed][Google Scholar]*

16. D. C. Dutta; text book of obstretrics, 5th edition 2001page-118, 334,335,343,432,441. *[Crossref][PubMed][Google Scholar]*