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STUDY OF EFFECT OF BIRTH COMPANION ON MATERNAL AND NEONATAL OUTCOME

Obstetrics & Gynaecology

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ABSTRACT

Introduction: Pregnant women desire a nurturing, supportive companion throughout labor to cope with the challenges of giving birth, including pain, fear, fatigue and uncertainty. Doula is defined as continuous presence of a support person during labor and birth. Can providing a doula of her choice to women during labor affect maternal and newborn outcomes? **Aims And Objectives:** To compare maternal & neonatal outcome of labor in presence and absence of doula at tertiary care center and study the maternal satisfaction in women with doula on Likert's scale. **Methods:** This was a prospective comparative observational study conducted with 158 women with doula support in study group and 142 women without doula in control group. Data was collected on maternal and neonatal outcomes including duration of labor, mode of delivery, need of analgesics, oxytocin augmentation, episiotomy rates, APGAR scores, NICU admissions, timing of initiation of breastfeeding & maternal satisfaction, compared & analyzed by appropriate statistical tests. **Results:** The study findings were shorter duration of labor, lower rates of oxytocin augmentation (6.96%), lower rates of caesarean sections (3.16%) in study group. The rate of NICU admission (3.16%) and time of initiation of breastfeeding was significantly lower in the study group than in the control group. Around 67.72% women were very satisfied and 13.92% women were partially satisfied in study group. **Conclusion:** Our study demonstrated that doula improves maternal & newborn outcomes by emotional & physical support during childbirth. Incorporating doula support into maternity care benefits promoting positive childbirth experiences, even with high caseload.

KEYWORDS

Doula, Maternal outcome, Neonatal outcome

INTRODUCTION:

In every country and community worldwide, pregnancy and childbirth are momentous events in the lives of women and families and represent a time of intense vulnerability.[1] Continuous labor support is the care, guidance, and encouragement provided by those who are with a pregnant woman in labor that aims to support labor physiology and mother's feelings of control and participation in decision making during childbirth.[2]

Pregnant women who enter into the labor room may find the hospital environment hostile and may get afraid. If a birth companion of her choice is available with her, due to the positive environment and support, oxytocin is naturally secreted.[3]

Our's is the tertiary care center, where we deliver around 20,000 cases per year and which works for giving Respectful Maternity Care and Doula is one of the components under RMC and LAQSHYA guidelines. The literature speaks positive about doula and positive birthing experience.

At a center with such a heavy caseload, it remains interesting to see how far it is possible to give doula care in such high service center with heavy caseload. Therefore, the present study is regarding the effect of presence of birth companion (doula) during perinatal period on maternal and newborn outcome in our tertiary care center.

Aims And Objectives:

- To study the sociodemographic profile of pregnant women and compare the maternal and neonatal outcome of labor in the presence and absence of doula in our tertiary care center and
- To study the maternal satisfaction in women with doula on Likert's scale.

MATERIAL AND METHODS:

This is a prospective comparative observational study conducted in Department of Obstetrics and Gynecology, GMCH, Aurangabad over a period of 2 years from September 2022 to August 2024.

The doulas were trained during the ANC visits after confirming their companionship during labor in booked ANC cases and those who wished to be birth companion in emergency just at the time of admission.

Training Of Doulas: The expectant mothers visiting the ANC OPD were informed about the Birth Companion Policy and took name and contact information of the birth companion of her choice.

The birth companion (Doula) register was maintained in ANC OPD and labor room. All Doula were trained collectively in a group of 10-15 companions on their role during labour, delivery and childbirth.

Training comprised of minimum two sessions of approximately 1 hour each and focused on emotional and physical support; emotional support including being present, demonstrating a caring and positive attitude, saying calming verbal expressions, praise, encourage and acknowledge efforts during labour. Physical support includes helping her to assume different comfortable birthing positions, give her fluids, food, massage the back, escort her to toilet and help her breastfeed. The birth companion was made aware of warning signs and symptoms during pregnancy, labour and postpartum period.

The IEC material explaining the roles of doula were displayed in local languages. During labor, non-pharmacological and pharmacological pain relief were given, they were provided emotional and physical support by the accompanying doula.

At the time of discharge from hospital every delivered woman was interviewed regarding perception of quality care received in terms of benefits of doula, problems encountered during the process and satisfaction rate was analysed using Likert scale with response ranging from 1 to 5.

Figure 1: The flowchart to demonstrate the study of effect of birth companion on maternal and perinatal outcome:

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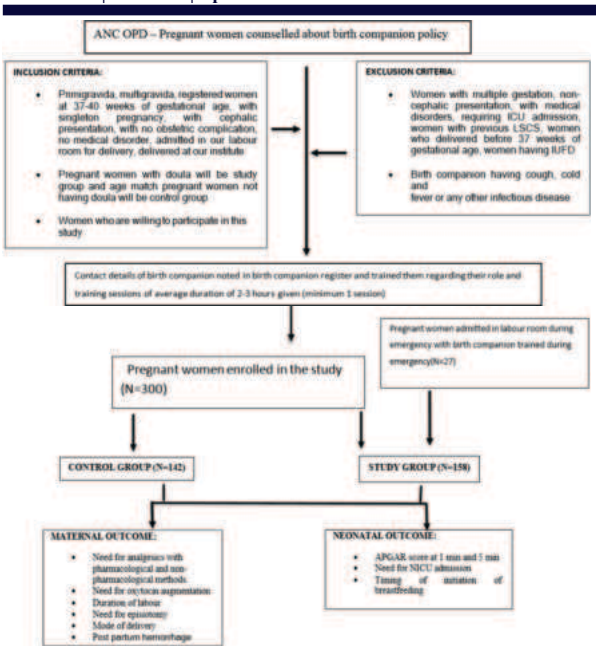

Patient Satisfaction Measured By Likert's Scale

Observations:

Table 1: Demographic Characteristics Of Participants In Study And Control Group:

Demographic characteristics		Study group (N=158)	Control group (N=142)	Statistical analysis (p-value)
Age group		18-23 years	18-23 years	
Parity	Primigravida	78(49.36%)	68(47.88%)	0.63
	Multigravida	80(50.64%)	74(52.12%)	
Residence	Urban	72(45.56%)	69(48.5%)	0.63
	Rural	86(54.4%)	73(51.4%)	
Booking status	Booked	131(82.91%)	57(40.14%)	0.000001
	Unbooked	27(17.08%)	85(59.85%)	
Socioeconomic status	Upper class (I)	2(1.26%)	1(0.7%)	0.64
	Upper middle class (II)	8(5.06%)	7(4.9%)	
	Lower middle class (III)	33(20.88%)	30(21.11%)	
	Upper lower class (IV)	53(33.54%)	34(23.94%)	
	Lower class (V)	62(39.24%)	70(49.29%)	

Amongst 300 pregnant women included in the study, 158 women were accompanied by the birth companion of their choice during labor and were included in study group and 142 women without birth companion and were included in control group.

Table 2: Characteristics Of Birth Companion:

		Study group (N=158)
Relation of birth companion	Mother	86 (54.43%)
	Mother-in-law	28 (17.72%)
	Sister-in-law	13 (8.2%)
	Sister	8 (5%)
	Grandmother	8 (5%)
	Neighbor	6 (3.79%)
	Aunt	5 (3.16%)
	Friend	4 (2.53%)
Training sessions attended by birth companion	1	28 (17.72%)
	2	5 (3.16%)
	3	35 (22.15%)
	4	29 (18.35%)
	>4	61 (38.6%)
Registration of birth companion	ANC OPD	112 (70.88%)
	Emergency	46 (29.11%)
Physical support provided by birth companion	Massaging back	152 (96.2%)
	Providing oral fluids and food	144 (91.13%)
	Assumption of birthing position	138 (87.34%)
	Escorting to toilet	122 (77.21%)
Emotional support provided by birth companion	Verbal encouragement	119 (75.31%)
	Providing information of labour progress	127 (80.37%)
	Familarising with health care system	138 (87.34%)
	Facilitate communication with health care providers	140 (88.6%)

The performance of doula was perceived as outstanding by majority women in study group irrespective of trained in single or multiple training sessions.

Table 3: Comparison Of Maternal Outcomes:

Characteristics		Study group (N=158)	Control group (N=142)	Statistical Analysis (p-value)
Need of pain relief	Non-pharmacological	145 (55.13%)	115 (43.72%)	0.000006
	Pharmacological	14 (37.83%)	23 (62.16%)	
Need of oxytocin augmentation	Yes	11 (6.96%)	65(45.7%)	0.000002
	No	147 (93.03%)	77 (54.22%)	
Mean duration of active phase of first stage of labor (in minutes)	Primigravida	240 ± 48.8	311 ± 63.2	0.0000003
	Multigravida	202.5 ± 60	239.3 ± 73.5	0.012
Mean duration of second stage of labour (in minutes)	Primigravida	33.58 ± 13.57	57.15 ± 18.19	0.000000006
	Multigravida	24.55 ± 11.35	31.49 ± 14.35	0.021
Requirement of episiotomy	Yes	10 (6.32%)	11 (7.74%)	0.63
	No	148 (93.67%)	131 (92.25%)	
Mode of delivery	Vaginal	151 (95.56%)	127 (90.71%)	0.015
	Instrumental	2 (1.26%)	3 (2.14%)	
	Caesarean section	5 (3.16%)	12 (8.45%)	
Post-Partum Hemorrhage (PPH)	Yes	7 (4.42%)	12 (8.44%)	0.12
	No	151 (95.56%)	130 (91.54%)	

It was observed that the need for analgesics, oxytocin augmentation, duration of active phase of first stage of labour and second stage of labour reduced significantly in the study group than the control group.The caesarean sections were done for obstetric indications so presence and absence of doula did not affect it.

Table 4: Comparison Of Neonatal Outcomes:

Characteristics			Study group (N=158)	Control group (N=142)	Statistical Analysis (p-value)
APGAR scores	At 1 minute	< or =7	8 (5%)	20 (14.08%)	0.012
		>7	150 (94.93%)	122 (85.91%)	
	At 5 minutes	< or =7	0 (0%)	11 (7.74%)	0.00025
		>7	158 (100%)	131 (92.25%)	
NICU admissions		Yes	5 (3.16%)	19 (13.38%)	0.0021
		No	153 (96.83%)	123 (86.61%)	
Mean duration of initiation of			13.43	24.15	0.000006

breastfeeding from delivery (in minutes)					

The APGAR scores were seen to be improved and early initiation of breastfeeding was facilitated in the study group. There was also reduced rate of NICU admission in the study group.

DISCUSSION:

Overall, the study suggests that physical and emotional support during labor is a crucial aspect of care, with varying levels of implementation across different studies. The present study reports high rates of physical and emotional support, indicating a positive trend in providing comprehensive care during labor; a higher percentage of women seeking non- pharmacological pain relief and a lower percentage seeking pharmacological pain relief compared to the other studies. It suggests that having a doula present during labor and delivery may be beneficial for both primigravida and multigravida as seen in study by Kim et al.[12]2022 , in terms of reducing the duration of the second stage of labor, higher rates of vaginal deliveries than instrumental deliveries or caesarean sections as in study by Gruber et al.[15]2013, a lower need for oxytocin augmentation and associated with a lower risk of PPH compared to other studies. The consistency of findings across studies suggests that doula support is associated with improved APGAR scores as in Kozhimannil et al.[21]2013, lower rates of NICU admissions as in Mottl- Santiago et al.[20]2017, early initiation of breast feeding and higher satisfaction levels among mothers.

Table 5: Comparison Of Role Of Doula With Different Studies:

Role of Doula	Components	Group	Madden et al.[4] 2016	Gupta et al.[5] 2017	Chang et al.[6] 2018	Lewis et al.[7] 2018	O'Hana et al.[8] 2018	Mc Grath et al.[9] 2018	Present study
Physical support	Massaging back	-	60%	-	72%	-	-	-	96.2 %
	Providing oral fluids/food		-	-	-	85%	70%	-	91.13 %
	Assumption of birthing position		-	60%	-	-	-	80%	87.34 %
	Escorting to toilet		-	-	-	90%	80%	-	77.21%
Emotional support	Verbal encouragement	-	85%	-	93%	-	-	-	75.31%
	Providing information of labour progress		-	-	-	90%	80%	-	80.37%
	Familarizing with health care system		70%	-	75%	-	-	-	87.34%
Pain relief	Non-Pharmacological	Study	70%	-	80%	75%	-	-	91.77%
		Control	40%	-	40%	30%	-	-	80.98%
	Pharmacological	Study	30%	-	20%	25%	-	-	8.22%
		Control	60%	-	60%	70%	-	-	19.01%

Maternal Satisfaction	Group	Kozhimannil et al.[21] 2013	Mottl-Santiago et al.[20]2017	Present study
Outstanding	Study	48%	44%	18.35%
	Control	20%	16%	1.4%
Very Satisfactory	Study	30%	32%	67.72%
	Control	25%	24%	40.14%
Satisfactory	Study	18%	20%	13.92%
	Control	35%	38%	52.81%
Unsatisfactory	Study	4%	4%	0%
	Control	14%	16%	5.63%
Poor	Study	0%	0%	0%
	Control	6%	6%	0%

Table 6: Comparison Of Maternal Outcomes With Different Studies:

Components		Group	Li et al.[10] 2019	Ha et al.[11] 2022	Kim et al.[12] 2022	Chen et al.[13] 2022	Patel et al.[14] 2022	Present study
Mean duration of second stage of labor (in minutes)	Study	Primigravida	-	39.1	42.9	-	-	40.7
		Multigravida	28.9	-	-	25.9	29.9	20.9
	Control	Primigravida	-	56.3	61.9	-	-	48.3
		Multigravida	41.9	-	-	37.9	42.9	24.96

	Group	Mode of delivery	Gruber et al.[15] 2013	Balde MD, et al.[16] 2020	Shrinivas N. Gadappa et al. [3] 2021	Present study
Mode of delivery	Study	Vaginal	80.4%	74.9%	78.6%	95.56%
		Instrumental	-	-	1.4%	1.26%
		Caesarean	19.6%	25.1%	20%	3.16%
	Control	Vaginal	75%	72.3%	72.6%	89.36%
		Instrumental	-	-	1.4%	2.1%
		Caesarean	24.2%	27.7%	26%	8.45%

	Group		Hodnett et al.[17] 2017	Brown et al.[18] 2018	Johnson et al.[19] 2019	Present study
Need of Oxytocin augmentation	Study	Yes	50%	55%	65%	6.96%
		No	50%	45%	35%	93.03%
	Control	Yes	65%	70%	45%	45.77%
		No	35%	30%	55%	54.22%

	Group		Mottl Santiago et al.[20] 2017	Shrinivas N. Gadappa et al.[3] 2021	Ha et al.[11] 2022	Present study
Requirement of episiotomy	Study	Yes	10.9%	8.57%	6.3%	6.32%
		No	89.1%	91.43%	93.7%	93.7%
	Control	Yes	23.1%	15.57%	15.5%	7.74%
		No	76.9%	84.43%	85.5%	92.25%

	Group		Kozhimannil et al.[21] 2013	Mottl-Santiago et al.[20] 2017	Shrinivas N. Gadappa et al.[3] 2021	Present Study
Post-Partum Haemorrhage	Study	Yes	2.6%	1.4%	2.4%	4.42%
		No	97.4%	98.6%	97.6%	95.58%
	Control	Yes	4.9%	3.3%	2.5%	8.44%
		No	95.1%	96.7%	97.5%	91.6%

Table 7: Comparison Of Neonatal Outcomes With Different Studies:

			Group	Kozhimannil et al.[21] 2013	Mottl-Santiago et al.[20]2017	Shriniv as N. Gadapp a et al.[3] 2021	Present study
APGAR scores	At 1 minute	< or =7	Study	4.1%	3.1%	-	5%
			Control	7.3%	6.1%	-	14.08%
		>7	Study	95.9%	96.9%	-	94.93%
			Control	92.7%	93.9%	-	85.91%
	At 5 minutes	< or =7	Study	1.1%	0.9%	1%	0%
			Control	2.5%	1.7%	3.2%	7.74%
		>7	Study	98.9%	99.1%	98.8%	100%
			Control	97.5%	98.3%	96.8%	92.25%
NICU admissions		Yes	Study	6.2%	3.4%	6.5%	3.16%
			Control	11.1%	6.5%	12.2%	13.38%
		No	Study	93.8%	96.6%	93.5%	96.83%
			Control	88.9%	93.5%	87.8%	86.61%

	Group	Kozhimannil et al.[21] 2013	Mottl-Santiago et al.[20] 2017	Balde MD, et al.[16] 2020	Shriniv as N. Gadappa et al.[3] 2021	Present study
Mean duration of initiation of breastfeeding from delivery (in minutes)	**Study**	28.4	22.1	48.2	25.9	13.43
	Control	45.6	38.5	43.5	42.1	24.15

CONCLUSION:

This study shows that it is feasible to give a birth companion to women at a tertiary care center even with a very high caseload also. Though this study has less number of cases, all low risk cases and is dependent on women's self-reported experiences, still we recommend incorporating doulas into maternity care for a positive childbirth experience, empowering parturient to navigate labor with confidence, dignity, satisfaction and getting well deserved Respectful Maternity Care services.

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