

Birth Outcome in Relation To Place and Mode of Birth In Women Of Remote Villages, A Community-Based Study

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Received date: June 01, 2024; **Accepted date:** July 03, 2024; **Published date:** July 06, 2024

Citation: Shakuntala Chhabra (2024), Birth Outcome in Relation To Place and Mode of Birth In Women Of Remote Villages, A Community-Based Study, *Maternity and Reproductive Health Sciences (MRHS)* 1(1), DOI: 10.1875/mrhs.2024/004.

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Abstract:

Background

Choice, safety, availability of different birth settings is important for healthy maternity of women around the world. Studies of births planned at home, birth centers and hospitals have revealed better and poorer outcomes. So it has become a research agenda.

Objective

Community-based study was conducted to know about birth outcomes in relation to place, mode of delivery in women of remote villages.

Material Methods

Information was collected about pregnancy outcomes in relation to place of birth, mode of delivery in women of remote villages. Pregnancy outcome details were recorded by asking women, seeing records, whatever they had.

Results

Many illiterate women gave birth at Subcenters(SC)/Primary healthcentres(PHC)(76.6%) and those with secondary/higher secondary education mostly delivered at DH/SDH (67.4%). Homemakers, agricultural laborers had the highest percentage of births at SC/PHC 52.2% and 50.5% respectively. As such more than 50% births occurred at SCs or PHCs. Of all the births at SDH 0.8% and at PHC 1.3% were stillbirths, home births had higher numbers of SBs 9.2%. However, the highest stillbirths were at district hospitals (DH), probably because of delayed, multiple referrals.

Conclusion -.

Key Words: Place of Birth, Mode of Birth, Stillbirth, Neonatal Outcome, Variables, Weight

Introduction

Acknowledgement

Authors are grateful to the Indian Council of Medical Research, New

Delhi for funding, which was only for research in villages.

Background

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Choice, safety and availability of different birth settings are important for women around the world. Hutton et al ¹ have reported that studies have shown that planned home births are associated with less likelihood of intrapartum interventions with no differences in neonatal outcome compared with planned hospital births. Scarf et al Vries et al ³ opined that births planned at home or in birth centres revealed better and poorer outcomes than those planned in hospitals. So it has become a research agenda.

Objective

Community Based study was conducted to know about birth outcomes in relation to place of birth, and mode of delivery in remote villages.

Material and methods

After approval of the base institute's ethics committee, information was collected about pregnancy outcomes in relation to place of birth, and mode of delivery in remote villages. A predesigned tool was used and consent was taken for collecting information. Women's pregnancy outcome details were recorded by asking women and seeing their records.

Study setting

Community based study in 100 villages in remote forestry and hilly region, near the village where a health facility was created.

Study design - Descriptive study

² did a systematic review and reported that the comparative safety of different birth settings was widely debated. Comparing research across the globe is complex, given differences in maternity services, data discrepancies, varying research techniques and their quality. De

Sample size

No sample size calculation was done as all the women who had births during the study period were included, except a few who migrated.

Study duration -Almost two years

Results -

Table I depicts details of women who delivered at home, sub-centres (SC), primary health centres (PHC), sub-district hospitals (SDH), district hospitals (DH), and other places in relation to various variables such as age, education, profession, economic status, and parity. Significantly more young women of 20 to 29 yrs of age delivered at DH/SDH 46.2 % (p-value 0.001) and women of 30 to 45 (68.2%) at SC/PHC. The numbers of home births were not different in different age groups. Many illiterate women gave birth at SC/PHC (76.6%) and those with secondary/higher secondary education mostly delivered at DH/SDH (67.4%). Homemakers and agricultural labourers had the highest percentage of births at SC/PHC, 52.2% and 50.5% respectively. As such more than 50 % of births occurred at SC/PHC.(Table 1)

Table I
Variables and Place of Birth

Variable	Total	HOME	%	*SC/ **PHC	%	\$DH/ \$\$ SDH	%	OTHERS	%
AGE									
15 To 19	816	25	3.1	589	72.2	193	23.7	9	1.1
20 To 29	2022	232	11.5	784	38.8	934	46.2	72	3.6
30 To 45	1067	57	5.3	728	68.2	262	24.6	20	1.9
TOTAL	3905	314	8.0	2101	53.8	1389	35.6	101	2.6
EDUCATION									
ILLITERATE	2068	169	8.2	1584	76.6	310	15.0	5	0.2
PRIMARY	980	82	8.4	381	38.9	506	51.6	11	1.1
SECONDARY/ HIGHER SECONDARY	536	63	11.8	86	16.0	361	67.4	26	4.9
GRADUATE	321	0	0.0	50	15.6	212	66.0	59	18.4
TOTAL	3905	314	8.0	2101	53.8	1389	35.6	101	2.6
PROFESSION									
HOMEMAKER	1441	156	10.8	755	52.4	527	36.6	3	0.2
AGRICULTUR E LABOURER	1012	61	6.0	430	42.5	511	50.5	10	1.0

CASUAL LABOURER*	966	57	5.9	585	60.6	305	31.6	19	2.0
SHOP KEEPER	486	40	8.2	331	68.1	46	9.5	69	14.2
TOTAL	3905	314	8.0	2101	53.8	1389	35.6	101	2.6
ECONOMIC STATUS									
UPPER CLASS	122	0	0.0	20	16.4	40	32.8	62	50.8
UPPER MIDDLE CLASS	251	5	2.0	111	44.2	110	43.8	25	10.0
MIDDLE CLASS	369	29	7.9	189	51.2	142	38.5	9	2.4
LOWER MIDDLE CLASS	1042	132	12.7	520	49.9	386	37.0	4	0.4
LOWER CLASS	2121	148	7.0	1261	59.5	711	33.5	1	0.0
TOTAL	3905	314	8.0	2101	53.8	1389	35.6	101	2.6
PARITY									
P 0	982	96	9.8	656	66.8	220	22.4	10	1.0
P 1- P 2	1830	103	5.6	986	53.9	683	37.3	58	3.2
≥ P 3	1093	115	10.5	459	42.0	486	44.5	33	3.0
TOTAL	3905	314	8.0	2101	53.8	1389	35.6	101	2.6

*SC – sub-centre, **PHC- primary health centre, \$ DH- district hospital \$\$ SDH – sub-district hospital

*Small Scale, (Food, Shoes making, Bamboo items) Industry, Welding Workshop, Brick furnace

Table II depicts the correlation between the place of birth and birth

outcome, stillbirth, live birth and neonatal deaths (NND). Of all the births at SDH, 0.8% and at PHC 1.3% were stillbirths, home births had higher numbers of SBs 9.2%. But the highest stillbirths were at DH probably because of delayed and multiple referrals. (Table II) Findings revealed the importance of health facilities in safe births.

Table II
Place of Birth and Outcome

Place of Births	Total	%	Still Births	%	LIVE			
					LIV E	%	AND	%
Home	314	8.0	29	9.2	243	77.4	42	13.4
SC	913	23.4	25	2.7	875	95.8	13	1.4
PHC	1188	30.4	15	1.3	1162	97.8	11	0.9
SDH	1339	34.3	11	0.8	1263	94.3	65	4.9
DH	50	1.3	5	10.0	42	84.0	3	6.0
OTHERS	101	2.6	5	5.0	90	89.1	6	5.9
TOTAL	3905	100.0	90	2.3	3675	94.1	140	3.6

* NND- Neonatal death, LB- Live birth,

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Table III elucidates the relationship between the place of birth and mode of delivery and its impact on stillbirths, live births and neonatal deaths. It reveals variations in stillbirths and neonatal deaths. Quite a lot of SBs and NNDs with CB at DH /SDH seem a matter of

concern. Actually, home births and vaginal births at sub-centres/primary health centers showed lower stillbirths and neonatal deaths compared to deliveries in DH/SDH with many CBs (Table III).

Variable	Total	HOME			*SC/ ** PHC			DH / \$ SDH						OTHERS					
		VB			VB			VB			CS			VB		CS			
		Still Birth	LB		Still Birth	LB		Still Birth	LB		Still Birth	LB		Still Birth	LB		Still Birth	LB	
LIVE	NND		LIVE	NND		LIVE	NND		LIVE	NND		LIVE	NND		LIVE	NND			
15 to 19	81 6	8	42	11	8	509	6	3	126	13	1	62	4	1	12	1	1	7	1
20 to 29	20 22	12	155	21	22	989	10	5	559	22	3	156	14	1	34	2	0	16	1
30 to 45	10 67	9	46	10	10	539	8	2	308	10	2	94	5	1	16	0	1	5	1
TOTAL	39 05	29	243	42	40	2037	24	10	993	45	6	312	23	3	62	3	2	28	3
EDUCATION																			
ILLITERATE	20 68	10	61	13	15	1516	10	5	299	17	4	87	10	1	12	1	1	4	2
PRIMARY	98 0	8	59	16	13	375	7	2	361	15	1	91	8	1	15	1	1	5	1
SECONDARY/ HIGHER SECONDARY	53 6	6	60	9	7	108	6	2	202	10	1	95	3	1	17	1	0	8	0
GRADUATE	32 1	5	63	4	5	38	1	1	131	3	0	39	2	0	18	0	0	11	0
TOTAL	39 05	29	243	42	40	2037	24	10	993	45	6	312	23	3	62	3	2	28	3
PROFESSION																			
HOMEMAKE R	14 41	8	71	19	18	820	10	2	337	20	1	92	12	0	20	0	0	11	0
AGRICULTUR E LABOURER	10 12	5	61	13	11	437	8	1	332	14	1	93	7	1	18	1	0	8	1
CASUAL LABOURER*	96 6	9	56	8	6	557	5	3	196	8	1	92	3	1	13	1	1	5	1
SHOP KEEPER	48 6	7	55	2	5	223	1	4	128	3	3	35	1	1	11	1	1	4	1
TOTAL	39 05	29	243	42	40	2037	24	10	993	45	6	312	23	3	62	3	2	28	3
ECONOMIC STATUS																			
UPPER CLASS	12 2	0	0	0	0	122	0	0	0	0	0	0	0	0	0	0	0	0	0
UPPER MIDDLE CLASS	25 1	0	0	0	0	251	0	0	0	0	0	0	0	0	0	0	0	0	0
MIDDLE CLASS	36 9	20	43	2	7	172	4	2	53	3	1	39	2	0	15	0	0	5	1
LOWER MIDDLE CLASS	10 42	8	77	9	10	536	8	3	244	20	2	94	5	1	16	0	1	7	1
LOWER CLASS	21 21	1	123	31	23	956	12	5	696	22	3	179	16	2	31	3	1	16	1
TOTAL	39 05	29	243	42	40	2037	24	10	993	45	6	312	23	3	62	3	2	28	3
PARITY																			
P 0	22 1	22	0	42	40	0	22	10	0	45	6	0	23	3	0	3	2	0	3
P 1- P 2	22 08	3	123	0	0	1253	2	0	618	0	0	156	0	0	33	0	0	20	0
≥ P 3	14 76	4	120	0	0	784	0	0	375	0	0	156	0	0	29	0	0	8	0
Total	39 05	29	243	42	40	2037	24	10	993	45	6	312	23	3	62	3	2	28	3

*SC – sub-centre, PHC- primary health centre, SDH – sub-district hospital

*NND- Neonatal death, LB- Live birth, CS- Cesarean section, VB- Vaginal birth

Table IV depicts the mode of delivery and its association with birth weight. Vaginal births comprised the majority of deliveries across various birth weight categories, with the highest percentage (46.2%)

falling into the > 2.5 kg category. The percentage of stillbirths decreased with the increasing birth weights, reaching its lowest at > 2.5 kg (0.1%), (Table IV). However birth weight of <1 kg (47.4%) had higher SBs with CBs.

Table IV
Modes of Delivery, Weight of Baby and Outcome

Modes of Delivery	Birth Weight (kg)	Total	%	Still Births	%	LB			
						LIVE	%	AND	%
Vaginal birth	<1	37	0.9	2	5.4	25	67.6	10	27.0
	≥1 to <1.5	107	2.7	8	7.5	98	91.6	1	0.9
	≥1.5 to <2	307	7.9	12	3.9	272	88.6	23	7.5
	≥2 to <2.5	710	18.2	10	1.4	698	98.3	2	0.3
	≥2.5	1806	46.2	1	0.1	1798	99.6	7	0.4
CS	<1	19	0.5	9	47.4	3	15.8	7	36.8
	≥1 to <1.5	51	1.3	14	27.5	26	51.0	11	21.6
	≥1.5 to <2	110	2.8	11	10.0	77	70.0	22	20.0
	≥2 to <2.5	355	9.1	10	2.8	313	88.2	32	9.0
	≥2.5	403	10.3	13	3.2	365	90.6	25	6.2
Total		3905	100	90	2.3	3675	94.1	140	3.6

*NND- Neonatal death, LB- Live birth, CS- Cesarean section

Discussion

The findings of the present study highlight the importance of considering both the place and mode of delivery in ensuring favourable fetal and neonatal outcomes. The importance of considering both the place and mode of delivery to try to mitigate the risk of adverse outcomes cannot be overlooked. The findings of the present study also reveal the importance of keeping birth weight for considering the mode of delivery. Health facility births are being advocated without looking at the risks associated with the capacity of health facilities. The overall, existing crowding in health facilities

affects not only the quality of care to the real needy but also creates a false sense of security. Also, interventions in childbirth have increased in the past decades. There is concern that some women might be receiving more interventions than really needed. For low-risk women, midwife-led birth settings may be of importance as a counterbalance towards increasing rates of interventions. Hutton et al¹ from Ontario, Canada reported that research was done using a provincial database of all midwifery-booked pregnancies compared to outcomes in women who planned home births at the onset of labour to a matched cohort of women with low-risk pregnancies who planned hospital births attended by midwives. Research outcomes

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revealed that the risk of SB or NND or serious morbidity did not differ significantly by planned place of birth. These findings were true irrespective of the first or more births. All intrapartum interventions were lower among planned home births. Hendrix et al⁴ did a study of women not accepting randomisation for a place of birth for the feasibility of randomized controlled clinical trials (RCT) in the Netherlands. The most important reason for refusing participation in the trial was that they had chosen their places of birth before they were asked to participate in the study at 12 weeks of pregnancy. The decision not to participate in the trial was not influenced by the information provided. In the present analysis of information of a remote, rural region, it is usually the husband, father-in-law, mother in law who decide the place of birth. Some families do plan hospital births because of advocacy from health providers, some plan home births and deliver at home. Quite a few lands up in hospital in an emergency after having planned home birth because of problems like delay in progress. It is also true that women plan hospital birth, but cannot reach the hospital for some or other reason including problems in transport or family not around. However, these things were not part of the present study. The analysis provided insight into different demographic and economic factors adding to the identification of areas for targeted interventions to improve maternal and neonatal outcomes. Christiaens et al⁵ earlier did a study to gain insight into the association between the satisfaction of childbirth and place of birth, in the context of two maternity-care systems, in Belgium and Netherlands by a comparative study using a questionnaire to assess satisfaction with childbirth. Women who had planned home births were more satisfied than women who had planned hospital births. This was true in every sub-dimension of satisfaction in hospital and independent midwifery practices in two comparable cities in Belgium and the Netherlands. Women who had planned home births were the most satisfied (in both countries), but Belgian women had higher satisfaction scores than Dutch women. This was paradoxical because a non-medical home context had a beneficial effect on satisfaction, whereas the Dutch non-interventionist approach in maternity care did not yield the same effect. Spaich et al⁶ did a study to investigate the extent to which satisfaction with childbirth depended on the mode of delivery and evaluated factors which determine satisfaction, and reported no differences between different modes of delivery. The absence of a person of trust during childbirth was linked with lower scores, indicating a negative experience. Marlow et al⁷ did a study about the effects of place of birth and perinatal transfer on survival and neonatal morbidity within a prospective cohort of births by analysis of intended hospital births and mortality at level 3 services. Survival was significantly enhanced following birth in

level 3 services, particularly those with high activity; this was not at the cost of increased neonatal morbidity. The present study findings revealed the importance of healthcare facilities in reducing stillbirth rates and ensuring safe deliveries. Ireland et al⁸ reviewed the manuals used in Australia, about the logic of planned birthplaces for remote aboriginal women and reported that the manuals demonstrated the use of predominantly scientific and clinical logic for planning birthplaces. However, women and families have many other things in mind. Patterson et al⁹ did a community-based study about remote rural women's choice of birthplace and transfer experiences in rural Otago and Southland New Zealand and reported that women planned to give birth in a regional hospital and chose their nearest rural primary maternity unit. All of the women were aware of the possibility of transfer and had made their decisions about birthplace based on perceptions of personal safety, and consideration of distances from specialist care. Themes included,

deciding about the safest place to give birth, making the decision of transfer, experiencing transfer in labour and reflecting on their birth experience and considering future birthplace choices. In the present study, while this was not part of the study, the women who delivered at DH had multiple transfers because of the remoteness of villages and lack of appropriate health facilities. Scarf et al² did a systematic review and meta-analysis about the maternal and perinatal outcomes by planned place of birth among women with low-risk pregnancies in high-income countries and reported that studies varied in design, location, context and definition of key terms. High-quality studies found no statistically significant difference in infant death by setting. Meta-analysis indicated that women planning hospital births had statistically significantly lower odds of normal birth than in other planned settings. Women experienced less severe perineal trauma or haemorrhage in planned home births than in maternity units. There were no statistically significant differences in mortality of the baby although most studies had limited statistical power to detect differences for rare outcomes. In the present analysis, it was found that CS had higher stillbirths, more so with a birth weight of <1 kg. These findings reveal the importance of keeping birth weight and considering the appropriate mode of delivery to mitigate the risk of adverse outcomes for mother and baby. Edmonds et al¹⁰ did a study to know the determinants of place of birth in uncomplicated births in Bangladesh and reported that women's self-identified criteria for the place of birth decisions in such cases were facilities where skilled birth attendants were available. Researchers reported that women's intention during pregnancy about where to deliver, perception of labor progress, the availability of transportation at the time of labor, and the proximity of a traditional birth attendant to the household were independent predictors of facility-based skilled birth attendant (SBA) assistance. Bolten et al¹¹ did a cohort study in the Netherlands to know the effects of planned place of birth on obstetric interventions and outcomes among low-risk women: They reported women who planned home birth more often had spontaneous birth and less often episiotomy and oxytocin in the third stage compared to women who planned hospital birth. Homer et al¹² did a linked population data study about maternal and perinatal outcomes by planned place of birth in Australia to compare perinatal and maternal outcomes and reported that compared with planned hospital births, the odds of normal labor and birth were over twice as high in planned birth centre births and nearly six times as high in planned home births in women with uncomplicated pregnancies. There were no statistically significant differences in the proportion of intrapartum deaths early or late neonatal deaths between the three planned places of birth. Kitui et al¹³ analyzed the records of Kenya's demographic and health survey to know about factors influencing the place of delivery and reported living in urban areas, being wealthy, being more educated, using antenatal care services optimally and having lower parity strongly predicted where women delivered, and so did region, ethnicity, and type of facilities used. Wealth and rural/urban residence were independently related. The effects of distance from a health facility were not significant after controlling for other variables. However, women most commonly cited distance and/or lack of transport as reasons for not delivering in a health facility but over 60% gave other reasons including 20.5% who considered health facility delivery unnecessary, 18% cited abrupt delivery as the main reason and 11% cited high cost. Shamsa et al¹⁴ did a study to know the association between the mode of delivery and selected neonatal and maternal morbidities and outcomes in New South Wales (NSW), Operative vaginal delivery and CS had significantly increased risk for maternal mortality compared to normal delivery. Mothers and babies with normal delivery achieved better outcomes. In the present

analysis, education and economic status significantly affected perinatal survival with almost months of perinatal loss in the upper class, and middle-upper class at SDH also. Dixon et al¹⁵ did an observational study by using retrospective data to know demographic differences between planned birthplace setting, neonatal outcomes and transfer rates for a cohort of low risk amongst New Zealand women and compared these findings where possible with those of the birthplaces in England. Women who planned to deliver at home in New Zealand were older and more likely to be multiparous, similar to those of the birthplace in England. The rates of transfer from home (16.9%) or primary unit (12.6%) to hospital were lower than the birthplace England cohort (21%). There were a higher proportion of nulliparous women (35%) in the planned home birth group who transferred although this was significantly lower than the birthplaces, the actual number of perinatal mortality outcomes was low across all settings for low-risk women in New Zealand and differences in birthplace were not statistically significant. The findings of the present study highlight the importance of considering both the place and mode of delivery in ensuring favorable fetal and neonatal outcomes. The importance of considering both the place and mode of delivery to try to mitigate the risk of adverse outcomes cannot be overlooked. The findings of the present study also reveal the importance of keeping birth weight for considering the mode of delivery

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