

## PRETERM BIRTH IN RURAL AND URBAN AREAS OF HISAR, HARYANA

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### ABSTRACT

A research study was conducted in Hisar city of Haryana in 2013. Seventy five women, each from rural and urban areas, who have delivered preterm baby, were interviewed for the study. The main objective of the study was to know the association between the different risk factors for preterm deliveries and areas of residence. It was found that in spite of less socio economic difference between the rural and urban areas selected for the study the risk factors namely, mother age at marriage, at the time of first birth, at the time of preterm birth, type of delivery, average spacing between children and for preterm babies, and sequence of the preterm birth, for preterm birth was found significantly associated with area of residence. The occurrence of preterm birth in rural areas was found high. Further, these preterm born babies were with less gestational age, less in weight and high mortality number was noticed in rural areas against the urban.

**KEYWORDS:** Preterm Birth, Residence Area, Risk Factors

### INTRODUCTION

World over children face numerous health problems like pneumonia, diarrhea, low birth weight and other birth complications. Of these, preterm birth is the single major cause associated with infant mortality and morbidity in both developing and developed world. In the under developed countries, on an average, 12.0 percent of babies born preterm compared with 9.0 percent in the developed countries. Globally 15 million babies born preterm and in India they account largest i.e. 3 millions. Preterm birth is first in neonatal and second largest cause of deaths after pneumonia in children under the age 5 years (March of Dimes, 2012). Scientifically, birth that occur before the completion of 37 weeks of gestation is termed as preterm birth. Based on the gestation period it is classified as late preterm (34 to 36 weeks), moderate preterm (32 to 33 weeks), very preterm (<32 weeks), and extreme preterm (<28 weeks).

Almost 50.0 percent of the causes of preterm birth are still unknown but as per the existing literature demographically, the reasons causing preterm birth varies from medical conditions to socio-psychological to economic reasons. However, basic riskfactors like less spacing between the children, sequence of preterm birth (Begum, *et al.* 2003), early marriages and younger maternal age (Bibby and Stewart, 2004; Singh, *et al.* 2007; Goldenberg, *et al.* 2008), etc., were found to be associated with preterm birth and can be minimized at individual or family level.

Researches shows that people living in rural and remote areas generally have a less favourable health outcome than those from urban areas (Bailey and Cole,2009)as they are geographically isolated, socioeconomic disadvantage, a shortage of healthcare providers, greater exposure to injury risks,etc. (Luo et al, 2004; Strutz et al,2012 and Edwards et al, 2012). Therefore, assuming the same for the preterm deliveries, it was hypothesized that respondents living in rural areas will have high occurrence of preterm births and mortality. The main objective of the study was to found the prevalence of preterm birth in urban and rural areas and the existence of association between the risk factors of preterm births and area of

residence.

## METHODOLOGY

The present study was conducted in Hisar district of Haryana during 2013, where multistage sampling procedure was adopted for the selection of rural and urban areas and ultimate sample respondents.

A list of women who already delivered preterm babies was obtained from the Civil Hospital, Hisar/PHCs. According to the list obtained from Civil Hospital Hisar, six localities of urban Hisar namely; Shiv colony, Jindal colony, Balwandhani, 12 quarter colony, HAU labour colony and slum of urban estate were selected randomly so as to get the required number of the respondents. To select the respondents from rural areas, six villages i.e. Balsam and, Rawal was, Ladwa, Kirtan, Mangali, Kaimri and Satroad were selected randomly.

To draw the ultimate sample respondents, seventy five women from rural and an equal number from urban areas, who delivered atleast one preterm baby were randomly selected. Thus, a total of 150 mothers constituted the sample for the study. An interview schedule was designed and after pretesting, the data was collected from the respondents through personal interviews.

## RESULTS AND DISCUSSIONS

### Profile of the Respondents

**Table 1: Socio Economic Profile of the Respondents (n = 150)**

Sr. No	Variables	Category	Frequency		Total
			Rural	Urban	
1.	Age (Years)	Young (20 – 30)	59 (39.3)	55 (36.7)	114 (76.0)
		Lower Middle (31-41)	11 (7.3)	12 (8.0)	23 (15.3)
		Upper Middle (42-52)	05 (3.3)	08 (5.3)	13 (08.7)
2.	Respondent's Education	Illiterate	18 (12.0)	22 (14.7)	40 (26.7)
		Read and write only	22 (14.7)	04 (2.7)	26 (17.3)
		Primary	04 (2.7)	11 (7.3)	15 (10.0)
		Middle	18 (12.0)	16 (10.7)	34 (22.7)
		High school	01 (0.7)	09 (6.0)	10 (06.7)
		Inter and above	12 (8.0)	13 (8.7)	25 (16.7)
3.	Family Education Status	Low (1-2.5)	37 (24.7)	21 (14.0)	58 (38.7)
		Medium (2.6 – 4)	13 (8.7)	28 (18.7)	41 (27.3)
		High (4.1- 6)	25 (16.7)	26 (17.3)	51 (34.5)
4.	Family Size (no. of family members)	Small (Up to 3)	16 (10.7)	23 (15.3)	39 (26.0)
		Medium (4-6)	38 (25.3)	43 (28.7)	81 (54.0)
		High (above 6)	21 (14.0)	09 (6.0)	30 (20.0)
5.	Family Type	Nuclear	39 (26.0)	66 (44.0)	105 (70.0)
		Joint	36 (24.0)	09 (6.0)	45 (30.0)
6.	Marital Status	Married	75 (50.0)	75 (50.0)	150 (100.0)
		Single / Widow/ Separated	0 (0.0)	0 (0.0)	0 (0.0)
7.	Respondent's Occupation	House wife	32 (21.3)	47 (31.3)	79 (52.7)
		Labour	37 (24.7)	04 (2.7)	41 (27.3)
		Service	06 (04.0)	24 (16.0)	30 (20.0)
8.	Husband's Occupation	Labour	36 (24.0)	13 (8.7)	49 (32.7)
		Service	13 (8.7)	48 (32.0)	61 (40.7)
		Independent occupation	03 (2.0)	13 (8.7)	16 (10.7)
		Agriculture	04 (2.7)	00 (0.0)	04 (2.7)
		Skilled labour	19 (12.7)	01 (0.67)	20 (13.3)

9.	Family Income (Monthly)	Low (Below 7000)	27 (18.0)	18 (12.0)	45 (30.0)
		Middle (7000 – 13000)	39 (26.0)	47 (31.3)	86 (57.3)
		High (Above 13000)	09 (6.0)	10 (6.7)	19 (16.7)
10.	House Type	<i>Katcha</i>	18 (12.0)	08 (5.3)	26 (17.3)
		Mixed	47 (31.3)	16 (10.7)	63 (42.0)
		<i>Puckka</i>	10 (6.7)	51 (34.0)	61 (40.7)

Figures in parentheses indicate percentages

The results regarding the profile of the respondents are presented in Table 1. More than one-fourth (26.7 %) of the respondents were illiterate and one-fifth (22.7%) had education up to middle level. The respondents were almost equally distributed on family education status. More than 50.0 percent had 4 to 6 members and 70.0 percent hailed from nuclear family type. All the respondents were married. More than half of the respondents (52.7 %) were not engaged in any occupation and involved in household chores. A sizable number of respondent's husband occupation was in public or private service (40.7%). A little less than three-fifth of the respondents (57.3%) were from middle income range and a sizable number of respondents had mixed (42.0%) and pukka (40.7%) houses.

Data in Table 1 reveal that the rural respondents have large joint families and reside in Kutch houses. However, on other variables both rural and urban respondents share almost the same characteristic, as sample respondents were from urban slums and rural poor families

### Prevalence of Preterm Birth

**Table 2: Prevalence of Preterm Birth in Rural and Urban Areas**

Sr. No	Indicator	Rural	Urban	Total
1	Total birth	176	171	347
2	Total normal birth	87	87	174
3	Total preterm birth	89	84	173
4	Gestational Age	<b>n=89</b>	<b>n=84</b>	<b>N=173</b>
	34 – 36 weeks	0 (0.0)	10 (11.9)	10 (5.8)
	32 – 33 weeks	46 (51.7)	33 (39.3)	79 (45.7)
	< 32 weeks	43 (48.3)	41 (48.8)	84 (48.5)
5	Sex of preterm			
	Male	72 (81.0)	57 (67.8)	129 (74.6)
	Female	17 (19.0)	27 (32.2)	44 (25.4)
6	Weight of preterm child at birth			
	Low (< 1.5 Kg)	44 (49.4)	31 (36.9)	75 (43.3)
	(1.5 – 2.5 Kg)	37 (41.6)	33 (39.3)	70 (40.5)
	High (> 2.5 Kg)	08 (9.0)	20 (23.8)	28 (16.2)
7	Mortality	44 (49.4)	21 (25.0)	65 (37.6)

Figures in parentheses indicate percentages; Respondents of the study delivered at least one preterm

Prevalence of preterm birth was depicted with the help of indicators listed in Table 2. In all, 150 respondents delivered 347 babies out of which 173 were born preterm. In rural areas preterm birth was found slightly higher compared to the urban areas.

The results pertaining to gestational age of preterm babies revealed that overall 48.5 percent preterm babies were reported to be born in < 32 weeks followed by 32 to 33 weeks (45.7%) and 34 to 36 weeks (5.8%). In rural areas more than

half of the preterm babies (51.7%) were born in between 32 to 33 weeks followed by less than 32 weeks (48.3%). About half of the urban preterm babies (48.8%) were reported to be born in <32 weeks followed by those (39.3%) born in between 32 to 33 weeks and 34 to 36 weeks (11.9%). Comparing the rural and urban situation it was found that in rural areas preterm deliveries were found in early gestation weeks (upto 33 weeks), however, in urban areas about 12 percent preterm deliveries were occurred during 34-36 weeks of gestation.

In all, about three-fourth (74.6 %) preterm born babies were male and 25.4 percent were female. In rural areas majority of the preterm born were male child (81.0%) and the same was found in urban areas (667.8%) however, in urban areas, female preterm child (32.2 %) was also found good in numbers.

A significant difference was noticed related to the weight of preterm born babies in rural and urban areas. In rural areas about half of the preterm babies (49.4%) were born with less than 1.5 Kg weight whereas, in urban areas it was found 36.9 percent. In urban areas, 23.8 percent of the preterm babies were born with more than 2.5 Kg weight however, in rural areas only 9.0 percent were born with more than 2.5 Kg weight.

Further, it was found that mortality of the preterm babies was higher in rural areas, where about 50 percent of the preterm born were found dead during their neonatal time period. However, in urban areas mortality was found 25 percent and the total mortality noticed was 37.6 percent irrespective of their area of residence.

### Preterm Birth and Residence Area

**Table 3: Association between the Risk Factors for Preterm Birth and Residence Area among the Respondents**

Sr. No	Indicator	Category	Residence Area		Total	Chi Square $\chi^2$
			Rural	Urban		
1.	Mother's age at marriage (n=150)	14 – 17 years	42 (56.0)	25 (33.3)	67 (44.7)	15.02*
		18 – 21 years	28 (37.3)	28 (37.3)	56 (37.3)	
		22 – 26 years	05 (6.7)	22 (29.4)	27 (18.0)	
2.	Mother's age at the birth of first child (n=150)	15 – 20 years	44 (58.7)	34 (45.3)	78 (52.0)	12.56*
		21- 25 years	21 (28.0)	32 (42.7)	53 (35.3)	
		26 – 30 year	10 (13.3)	09 (12.0)	19 (12.7)	
3..	Mother's age at the birth of first preterm child (n=150)	15 – 21 years	35 (46.7)	31 (41.3)	66 (44.0)	8.98*
		22 – 27 years	37 (49.3)	31 (41.3)	68 (45.3)	
		28 – 35 years	03 (4.0)	13 (17.3)	16 (10.7)	
4	Type of delivery for preterm child+ (n=173)	Normal	75 (84.3)	49 (58.3)	124 (71.7)	14.31*
		Cesarean	14 (15.7)	35 (41.7)	49 (28.3)	
5.	Sequence of preterm birth+ (n=173)	First	45 (50.5)	28 (33.3)	73 (42.19)	9.31*
		Second	18 (20.3)	34 (40.5)	52 (30.0)	
		Third	10 (11.2)	10 (11.9)	20 (11.6)	
		Fourth and Above	16 (18.0)	12 (14.3)	28 (16.2)	
6.	Average spacing between the normal children+ (n=174)	Less than 2 years	50 (57.5)	28 (32.18)	78 (44.8)	11.67*
		2.0 – 3.0 years	20 (23.0)	36 (41.4)	56 (32.2)	

		More than 3 years	17 (19.5)	23 (26.43)	40 (23.0)	
7.	Spacing for preterm child+ (n=173)	Less than 2 years	56 (63.0)	38 (45.2)	94 (54.3)	6.51*
		2.0- 3.0 years	14 (15.8)	25 (29.8)	39 (22.5)	
		More than 3.0 years	19 (21.2)	21 (25.0)	40 (23.2)	

Multiple Responses; Figures in parentheses indicate percentages \*Significant at 5 percent level of significance

To understand the occurrence of preterm birth in urban and rural areas various variables were chosen and their association was worked out with the residence area (Table 3).

Age of the respondents at marriage, at the birth of first child and at the birth of preterm child was found very young in majority of the respondents i.e. married at the age of 14-17 years (44.7 %), gave birth to first child between 15 – 20 years (52.0%) and delivered preterm child between 15 -21 years (44.0%). Further, rural respondents consist major part of these age categories compared to the urban respondents, and significant association was noticed between residence area and respondents at marriage ( $\chi^2 = 15.02$ ), at birth of first child ( $\chi^2 = 12.56$ ) and at birth of preterm child ( $\chi^2 = 8.98$ ). A significant association was also found between the type of delivery and residence area, where it was revealed that in rural areas most of the preterm deliveries were normal (84.3%) however, in urban areas both normal (58.3%) and cesarean (41.7%) were common.

The results regarding sequence of preterm born babies revealed that in 42.19 cases the first child was born preterm followed by second (30.0%), third (11.6%) and fourth and above (16.2%). Comparatively, in rural areas more number of preterm babies born in first order of birth (50.5%) whereas urban areas it was almost equally distributed between first (33.3%) and second birth order (40.5%) and significant association ( $\chi^2 = 9.31$ ) was observed between the two, residence area and sequence of birth.

It was found that 44.8 percent of the respondents had less than two years of spacing between their normal children birth however, in rural areas, more than half of the respondents had less than 2 years of spacing between their normal children. The results pertaining to spacing for preterm babies (Table 3) revealed that more than half of the preterm born babies (54.3%) had < 2 years spacing followed by >3 years (23.2%) and 2 to 3 years (22.5%). However, more than 60 percent of the respondents had less than two years spacing for preterm babies. The results depicted a significant association between the residence area and both, the spacing between the normal children ( $\chi^2 = 11.67$ ) and preterm babies ( $\chi^2 = 6.51$ ) which shows lesser the space between the children more chances are there for occurrence of preterm birth.

**CONCLUSIONS**

It was found that respondents gave birth to total of 347 babies out of which 174 were normal and 173 were born preterm. Majority of the born preterm babies were found male child and most of them were born in rural areas. It was found that majority of the preterm born were of less than 1.5 Kg and almost half of the preterm born in rural areas belong to this

category. From total, majority of the preterm babies was born before the completion of 32 weeks (48.5%) followed by 32-33 weeks (45.7 %). Further, the mortality among the preterm babies was found 37.6 percent and it was found very high in rural areas (49.4%).

Various risk factors for preterm delivery were considered for the study and the association between residence area and these risk factors was worked out by implementing chi-square test for understanding the occurrence of preterm birth. These risk factors were respondent's age at marriage, at the time of first birth, at the time of preterm birth, type of delivery, average spacing between children and for preterm babies, and sequence of the preterm birth. All these factors were found significantly associated with the residence area, where in most of the factors rural condition was found vulnerable.

Although for the study both rural and urban areas has similar characteristic there was significant difference in the occurrence of preterm birth. Age of the respondents at marriage, average spacing between the children, etc was found very less among the rural respondents which lead to the deliveries of preterm children with less gestational age, low birth weight or high mortality of preterm born babies. The other cause may be the less access to health care facilities in rural, existing culture and traditions, insufficient knowledge regarding safe pregnancy, etc.

Therefore, there is a need for designing customized interventions which will help reproductively active age group people to understand the importance of family planning, pre and post pregnancy cares, etc. however, other measures like providing better health care services and linking the rural people to the urban areas with good transport facility will definitely provide better results in minimizing the preterm birth cases.

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