



Association of socioeconomic disparity of the pregnant women with adverse pregnancy outcomes

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ABSTRACT

Socioeconomic status of the pregnant women is a key determinant of the pregnancy outcomes. The government of India has started several health schemes to provide appropriate antenatal care for the pregnant women. The present study aimed to assess the association of socioeconomic status of pregnant women with adverse pregnancy outcomes after the implementation of these schemes. The present study used Kuppuswamy scale to determine the socioeconomic status of the study subjects and pregnant women of both upper and lower SES class without major pregnancy complications were recruited into the study. These subjects were followed up until delivery, and their adverse pregnancy outcomes such as lower segment cesarean section (LSCS) delivery, preterm birth, low birth weight (LBW) and neonatal intensive care unit (NICU) admission were reported. In the present study, the rate of LSCS, preterm birth, LBW and NICU admission was high among the lower SES group as compared to the upper SES group women. However, NICU admission had a statistically significant association with SES of pregnant women at $p=0.038$. The difference in the occurrence of adverse pregnancy outcomes among the upper and lower SES pregnant women is minimal, which could be attributed to the enrolment of lower SES pregnant women to the government health schemes. Hence, to overcome the economic disparities among the pregnant women, the implementation of government health schemes should be strengthened by promoting the role of the accredited social health activist (ASHA) worker.



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INTRODUCTION

Pregnancy is a beautiful journey in the life of a woman, but the high prevalence of fetal and mater-

nal morbidity and mortality makes this experience unfruitful. One of the most important factors that can affect the pregnancy outcomes is the socioeconomic status (SES) of the pregnant woman (Unicef, 2019). Women of higher socio-economic status can afford their healthcare visits, nutrition and obtain adequate care with relative ease. On the other hand, pregnant women from the lower socioeconomic status are failing to obtain adequate nutrition, appropriate care and are also having limited access to healthcare information (UNICEF, 2019; Health Connect Fellowship, 2020). To overcome this predicament in India, the government has started the several healthcare schemes that provide adequate nutrition, appropriate antenatal care or financial support to seek antenatal care to the pregnant women belonging to the lower socioeco-

conomic status (Government Of India , 2021; Pregnant Women Schemes, 2019; Government of India, 2014). Besides, Ministry of Health and Family Welfare (MoHFW) have recruited local women and designated them as “accredited social health activist (ASHA) workers”, who are being trained to act as health promoters and educators and will be the primary healthcare contact person for economically deprived pregnant women for all their health-related issues. These ASHA workers motivate the poor pregnant women to have their regular antenatal check-up and to have their labor under medical supervision (institutional delivery) (Accredited Social Health Activist (ASHA), 2021). A study by (Gupta, 2012) showed that implementation of the government health schemes have improved the number of institutional deliveries and could bring health equity among the Indian population. Hence, the current study aimed to determine the association between the socioeconomic status of pregnant women with adverse pregnancy outcomes after the implementation of the government health scheme.

MATERIALS AND METHODS

Methodology

A prospective cross-sectional study was carried out in the Obstetrics and Gynaecology department of a tertiary care hospital in Bengaluru from January 2017 to June 2019. The current study obtained the Institutional Ethics Committee (IEC) approval, and written informed consent from the study participants was also obtained. The SES of study subjects was determined using the Kuppuswamy scale, which considers the head of the family’s educational status and occupation along with the total income of the family (Patro *et al.*, 2012). The study included pregnant women belonging to upper and lower socioeconomic status with < 12 weeks of gestation and without major complications such as anaemia, preeclampsia, eclampsia, and gestational diabetes, which may require additional medical care. These health-related issues during pregnancy may have a direct association with the adverse pregnancy outcomes, which may affect the credibility of the SES association with pregnancy outcomes.

The demographic, anthropometric, clinical complaints, laboratory parameters, past and present medical, medication, and obstetric history details were documented. Besides, the type of government scheme availed by the study subjects was also captured. The recruited subjects were divided into two groups as “Upper SES” and “Lower SES” groups, based on their socio-economic status. The follow-up of the recruited subjects was carried out

until delivery, and their pregnancy outcomes were documented. In the current study, lower segment cesarean section (LSCS), preterm birth, low birth weight (LBW), neonatal intensive care unit (NICU) admission were the adverse pregnancy outcomes of interest.

The purposive sampling technique was used to determine the sample size for the current study. The current study used the Microsoft excel tool for carrying out statistical analysis. Continuous variables of the study were expressed as mean \pm standard deviation. The association of maternal characteristics with adverse pregnancy outcomes was determined using Chi-square analysis at a 5% level of significance.

RESULTS AND DISCUSSION

A total of 238 subjects who presented without any major health issues were included in our study, of which 125 (52.52%) belonged to the upper SES class and 113 (47.48%) belonged to the lower SES class, based on Kuppuswamy scale. The mean age of the pregnant women was 26.53 ± 3.95 years. In the present study, 2 subjects had twin pregnancy while 6 subjects reported an Rh-negative blood group. The demographic details of the pregnant women are shown in Table 1. Among the lower SES class subjects, 65 subjects availed government health schemes. The different types of government health schemes availed by the study subjects has been shown in Figure 1.

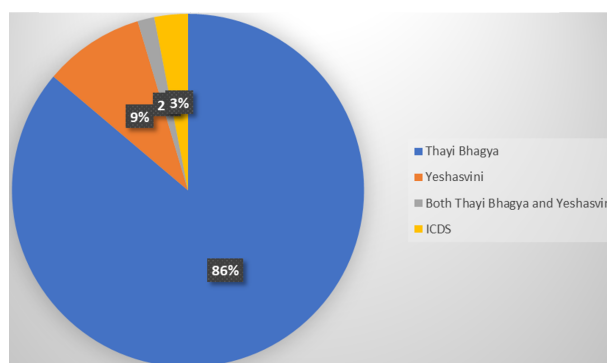


Figure 1: Government Health Schemes availed by lower SES pregnant women

In the current study, economic disparity among the study subjects had an impact on maternal educational qualification, age at first conception after marriage, and maternal BMI at the time of conception. Women of the upper SES group were more educated as compared to that of lower SES group women (Table 1). Higher educational qualification of the upper SES subjects might result in marriage at an older age, as compared to the lower SES subjects.

Table 1: Socio-demographic characteristics of the pregnant women

Maternal Characteristics	Upper (n=125)	Lower (n=113)	Total (n=238)
Maternal Age Group			
18-25 years	36	62	98
26-35 years	88	50	138
≥36 years	1	1	2
Parity			
Primigravida	61	63	124
Multigravida	64	50	114
Availing of government health schemes			
Yes	7	65	72
No	118	48	166
Maternal Educational Qualification			
Schooling	3	94	97
PU*	34	14	48
Graduate and higher	88	5	93
Maternal BMI			
Healthy BMI	61	59	120
Unhealthy BMI#	64	54	118
Maternal Diet			
Mixed	121	105	226
Vegetarian	4	8	12

*PU:Pre-University

Unhealthy BMI: BMI <18.5 or ≥25kg/m²**Table 2: Association between socioeconomic status of pregnant women and adverse pregnancy outcomes.**

Adverse Feto-maternal outcomes	Upper SES	Lower SES	Chi-square (x ²)	p-value
LSCS				
Yes	73	78	2.8897	0.089
No	52	35		
Preterm Birth (<37 weeks)				
Yes	17	24	2.428	0.119
No	108	89		
Low Birth Weight (<2500gms)				
Yes	21	26	1.443	0.229
No	104	87		
NICU admission				
Yes	35	46	4.2691	0.038*
No	90	67		

*p<0.05, statistical significance

Hence, the maternal age at first conception would be older among upper SES group as compared to lower SES group women. In this study, among the 61 primiparous women of the upper SES group, 36 (59.01%) subjects belonged to the age group of 26-35 years, while from the 63 primiparous women of the lower SES group, a majority (38, 60.31%) belonged to the age group of 18-25 years. The unhealthy BMI of pregnant women was high among upper SES pregnant women as compared to lower SES pregnant women, while underweight subjects were 2 and 6 among upper and lower SES groups, respectively.

The above-mentioned maternal characteristics may have an impact on the growth of the baby and may result in adverse pregnancy outcomes. Low level of education and poverty among the lower SES group women deprive them of appropriate healthcare information, which may affect their approach towards their health condition and thus increases the risk of adverse pregnancy outcomes (Andriyanov *et al.*, 2019; Shieh and Halstead, 2009). In the current study, a high rate of Cesarean Section was seen in the lower SES group (69.02%) as compared to the upper SES group (58.4%), similar findings were seen in (Aftab *et al.*, 2012) study, where 26.6% LSCS delivery was seen among pregnant women with monthly income <12000 Pakistani Rupee as compared to women (20%) with monthly income > 12000 Pakistani Rupee. The overall LBW observed in the current study was 19.74% which is almost equivalent to the rate (20%) reported in the 2011 statistics of India (Mascarenhas, 2019). The rate of preterm birth and LBW was high among the lower SES as compared to the upper SES group. The SES association with the occurrence of preterm birth and LBW was not statistically significant at $p < 0.05$ (Table 2). This result of the present study was consistent with the results of (Choudhary *et al.*, 2013) study among urban slum communities, with the prevalence of LBW being 36.2%. In a study by (Kim *et al.*, 2018), women of the low SES group had higher rates of preterm birth (2.1%) as compared to middle/higher class women (1.4%), which is also consistent with our study results. On the other hand, NICU admissions of new-borns born to the lower SES group was high as compared to their upper counterparts, and there was a statistically significant association between the SES of the pregnant woman and NICU admission at $p = 0.038$.

The difference in the rate of adverse pregnancy outcomes between the upper and lower SES pregnant women was found to be nominal, which shows an improvement in the healthcare outcomes among the poor pregnant women. This could be attributed to

the enrolment of the study subjects to at least any one of the Government Health Schemes (Pregnant Women Schemes, 2019). These women were issued with an antenatal card called as "Thayi Card", which captures all the details of the pregnant women such as present pregnancy details, past medical and medication history, obstetric history, past pregnancy history, type of government scheme enrolled. Besides, it also consists of health education tips for pregnant women in the local language (Kannada) (Aaron, 2019). A total of 57 (87.69%) women enrolled in the Thayi Bhagya scheme, which entitles the poor pregnant woman to have free delivery at a Private hospital. Since the current study site is a private hospital, most of the pregnant women enrolled in this scheme (Government Of Karnataka, 2016). Besides Integrated Child Development Services (ICDS) scheme provides nutritional food supplies to the study subjects both during the pregnancy and in their postpartum period (ICDS, 2009). It also provides nutrition and health check-ups for their new-borns until the age of 6 years. On the other hand, the yeshasvini scheme is a Cooperative Health Scheme launched by the Government of Karnataka for the farmer families, which enables the poor pregnant women from farming background to have their medical care at nominal to no cost (Government Of Karnataka, 2017).

CONCLUSION

Women of upper SES can support their healthcare needs during pregnancy when compared to the lower counterparts. Hence, to improve the pregnancy outcomes among the poorer sections, implementation of government health schemes should be strengthened, which can be achieved by promoting the role of accredited social health activist (ASHA) workers.

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Conflict of Interest

Authors declare no conflict of interest against the study.

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