

## Effect of demographic factors on obstetrical outcome Sangeeta Pahwa<sup>1\*</sup>, Tavleen Kaur<sup>2</sup>

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### Abstract

**Background:** In light of the adverse obstetrical outcomes related to age, socioeconomic and educational status, it is crucial to find out the effect of these factors on increased maternal- fetal morbidity and mortality so that measures can be taken to improve prognosis. Pregnancy at advanced maternal age has become more common in both developed and developing countries over the last decades. The association between adverse perinatal outcomes and advanced maternal age has been a matter of discussion. Similarly at lower age, outcome is not without complications. Education, socioeconomic status and residence also largely influence obstetrical outcome. **Aim:** To study effect of various demographic factors on obstetrical outcome. **Material and method:** This study included 150 indoor and OPD patients in Sri Guru Ram Das Institute of Medical Sciences, Vallah, Amritsar, Punjab, India. Each patient was asked about the previous pregnancies, about the mode of delivery and any associated complications. Patient who had come for antenatal visits were examined and stratification was done according to risk factors like hypertension, diabetes, anemia, malnutrition and other socioeconomic factors. Following this, co-relation was studied between these. **Conclusion:** For Clinicians who are counseling young women, it is of importance to highlight the need of antenatal care and its benefit. There is need for individualizing antenatal surveillance programmes and obstetric care based on age, socio-economic strata and education which is the need of the hour for the progress of nation.

**Keywords:** gestational diabetes mellitus (GDM), intrauterine growth restriction (IUGR), Preterm birth.

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### Introduction

Age is a very important demographic factor which plays a pivotal role in obstetrical outcome[1]. Age at which the mother conceives is independently associated with pregnancy outcome. Education about physical and mental well-being is important for women; its effect on obstetrical outcome cannot be ignored. Belonging of women to rural or urban area determines the availability of health, antenatal facilities and access to tertiary center whenever there is any need[2].

Women with low socioeconomic status get married at younger age, thus getting pregnant at an earlier age with more children. Also with less inter pregnancy interval and sustained poor nutritional status adds to anemia and malnutrition which are the major contributing factors in maternal and fetal outcome in the form of prematurity and low birth weight. Poverty and lack of awareness about antenatal care, free hospital delivery and health care facilities, many deliveries are still done by untrained dai, leading to high maternal mortality rates inspite of various national health programmes[3]. On the other hand , it was observed in women of middle or high socioeconomic status, marriage occurred late due to desire of higher education and career demands, conception is late that leads to pregnancies with congenital defects and associated lifestyle diseases like diabetes and

hypertension .This group tend to have elective primary caesarean sections on demand due to precious pregnancies following infertility treatment or due to fetal distress as over diagnosed by continuous cardiotocography (CTG) of high risk patients thus increasing the risk of morbidly adherent placenta in future pregnancies leading to more chances of ICU stay and cost counting to maternal mortality again. Thus, one strata is contributing to the burden on country leading to unemployment, drug addiction, poverty, ICU care and cost due to high number of patients having PPH and obstructed labor and other strata by having congenital defects in babies, expenses of IVF pregnancies and morbidity due to chronic state of diabetes and hypertension. This tends to continue forming a vicious circle[4].

#### Material and Methods

The present observational study was conducted among 150 indoor and OPD patients in Sri Guru Ram Das Institute of Medical Sciences, Vallah, Amritsar, Punjab, India.

Inclusion criteria:

1. Patient coming in OPD for antenatal visit
2. Indoor patients who came in emergency due to obstetrical complications

#### Methodology

Each patient was asked about the previous pregnancies, about the mode of delivery and any associated complications. Patient who had come for antenatal visits were examined and stratification was done according to risk factors like hypertension, diabetes, anemia, malnutrition and other socioeconomic factors. Following this, co-relation was studied between these.

#### Results

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**Table 1: Maternal-Fetal outcome in relation to age**

| Age (In years) | No. of subjects | Mode of delivery |          |           | Maternal complications |           |         |          | Fetal complications |        |         |                |
|----------------|-----------------|------------------|----------|-----------|------------------------|-----------|---------|----------|---------------------|--------|---------|----------------|
|                |                 | NVD              |          | LSCS      | ANEMIA                 | PPH       | PIH     | GDM      | IUGR                | IUD    | Preterm | NICU admission |
|                |                 | DAI              | HOSPITAL |           |                        |           |         |          |                     |        |         |                |
| <20            | 10(6%)          | 4(40%)           | 3(30%)   | 3(30%)    | 10(100.0%)             | 5(50%)    | 6(60%)  | 1(10%)   | 8(80%)              | 3(30%) | 2(20%)  | 2(20%)         |
| 21-25          | 38(25%)         | 13(34%)          | 7(18%)   | 18(47%)   | 22(57.8%)              | 10(26.3%) | 6(15.7) | 7(18.4%) | 12(31%)             | 2(5%)  | 2(5%)   | 10(26%)        |
| 26-30          | 56(37%)         | 10(17%)          | 15(26%)  | 19(34%)   | 16(28%)                | 7(12.5%)  | 3(5%)   | 6(10.7%) | 10(17%)             | 1(1%)  | 4(7%)   | 3(5%)          |
| 31-35          | 33(24%)         | 4(12%)           | 10(30%)  | 19(57.5%) | 10(30%)                | 5(15%)    | 7(21%)  | 10(30%)  | 12(36%)             | 2(6%)  | 1(3%)   | 2(6%)          |
| >35            | 13(8%)          | 0                | 3(23%)   | 10(78%)   | 2(15%)                 | 1(7%)     | 5(38%)  | 8(24%)   | 8(62%)              | 1(7%)  | 1(7%)   | 0              |

Out of 150 cases, 6% patients were in age group of <20 years, 7 cases had vaginal delivery (40% Dai handled and 30% Hospital delivery and 3 patients had LSCS with anemia in all 100% cases. 5 cases of PPH, 6 PIH, 1 GDM. Fetal complications like 8 cases of IUGR, 3 IUD, 2 PRETERM and 2 NICU admissions. 25% patients in age group of 21-25 years, 13 had Dai and 7 hospital delivery and 18 LSCS. 57.8% cases had anemia, 26.3% had PPH, 15.7% PIH and

18.4% GDM cases. Fetal complications-IUGR in 12 cases, 2 IUD, 2 preterm and 10 NICU admissions which was maximum in all the groups. In >35 years age group, had no Dai handled case, 3 normal vaginal delivery and 10 LSCS. 2 cases of anemia, 1 PPH, 5 PIH and 8 cases of GDM. Fetal complications-8 IUGR, 1 IUD and 1 preterm with no NICU admission.

**Table 2: Maternal and fetal outcome in relation to socioeconomic status**

| Socioeconomic status | No. of subjects | Mode of delivery |          |         | Maternal complications |         |         |         | Fetal complications |         |         |                |
|----------------------|-----------------|------------------|----------|---------|------------------------|---------|---------|---------|---------------------|---------|---------|----------------|
|                      |                 | NVD              |          | LSCS    | Anemia                 | PPH     | PIH     | GDM     | IUGR                | IUD     | Preterm | NICU admission |
|                      |                 | DAI              | Hospital |         |                        |         |         |         |                     |         |         |                |
| Lower                | 63(42%)         | 25(39%)          | 35(23%)  | 3(4%)   | 50(79%)                | 5(7.9%) | 6(9.5%) | 1(1.5%) | 32(50%)             | 5(7.9%) | 12(19%) | 9(14%)         |
| Middle               | 58(38%)         | 6(10%)           | 42(72%)  | 10(17%) | 23(39%)                | 4(6%)   | 8(13%)  | 6(10%)  | 22(37%)             | 1(1.7%) | 6(10%)  | 5(8%)          |
| Upper                | 29(19%)         | -                | 10(34%)  | 19(65%) | 10(34%)                | 2(6%)   | 9(31%)  | 12(41%) | 6(20%)              | -       | 2(6%)   | 2(6%)          |

42% of the patients were lower socioeconomic status, 25(39%) had Dai handled deliveries and only 3(4%) LSCS, 79% were anemic, 9.5% developed PIH, 50% had IUGR and 14% NICU admissions

while 19% were from upper socioeconomic status, out of which 19(65%) cases had LSCS with 41% developed GDM, 31% developed PIH and in 6% babies were shifted to NICU.

**Table 3: Maternal and fetal outcome in relation to residence**

| Residence | No. of subjects | Mode of delivery |          |         | Maternal complications |       |        |        | Fetal complications |       |         |                |
|-----------|-----------------|------------------|----------|---------|------------------------|-------|--------|--------|---------------------|-------|---------|----------------|
|           |                 | NVD              |          | LSCS    | Anemia                 | PPH   | PIH    | GDM    | IUGR                | IUD   | Preterm | NICU admission |
|           |                 | Dai              | Hospital |         |                        |       |        |        |                     |       |         |                |
| Rural     | 76(50.6%)       | 34(44%)          | 36(47%)  | 6(7%)   | 34(44%)                | 5(6%) | 4(5%)  | 3(4%)  | 12(15%)             | 5(6%) | 12(15%) | 2(2%)          |
| Urban     | 74(49.33%)      | 15(20%)          | 35(47%)  | 24(32%) | 24(32%)                | 6(8%) | 8(10%) | 9(12%) | 14(18%)             | 6(8%) | 12(16%) | 6(8%)          |

50.6% of the patients were from rural area, 44% had Dai handled delivery with only 6(7%) ISCS cases with 44% were anemia, 4% were GDM, 15% were IUGR with 2% NICU admissions while 49.3% were from urban area with 24 (32%) ISCS cases 32% anemic, 10% had PIH, 12% GDM, 18% IUGR with 6% NICU admissions.

**Discussion**

Our study showed that mode and place of delivery differed over maternal age, strata and educational status. Significantly more normal vaginal deliveries and fewer caesarean sections were seen among women aged <20 years compared with women aged >35 years of age. In our study, lowest limit of marriage was 18 years with first conception before 20 years of age leading on to complications of PIH, anemia, malnutrition and PPH was seen in these women due to poor resource and lack of awareness about free ANC care[5,6]. It was seen that till there are women who are attended by Dai at their village at the time of delivery counting too many complications which are otherwise avoidable. It was seen in one case where patient was attended by birth attendant at her home, she delivered a dead baby (intrapartum death) and landed up in hospital with retained placenta, manual removal of placenta was done, had colostomy and was admitted to ICU. Another case where patient came to hospital in obstructed labour with fetal bradycardia, immediate caesarean section was done, baby was admitted to NICU and mother was kept under observation in emergency. In <20 years, there were 10 women who got married before 20 years, 60% of these belonged to lower socioeconomic class and lived in rural area, 70% were illiterate, of which 70% had vaginal delivery and 30% had caesarean sections which were emergency cases in majority of the cases. Anemia was seen in almost all of them with other complications like PPH (50%), PIH (60%) and one case of GDM. Fetal complications like; IUGR (80%), IUD (3 cases), preterm deliveries and NICU admissions in 20% of the cases. In age group of 21-25, 52% had vaginal delivery and 47% had caesarean sections. In 26-30 years, 44% had vaginal

delivery and out of this 17% were Dai handled cases. In 31-35 group, 42% had vaginal delivery. On the contrary, in age group of >35 years, only 23% had vaginal delivery with no Dai handled case and caesarean section in 76% of the cases with majority cases on demand or for IVF precious pregnancy. In relation to births in public care, there was a prevalence of vaginal delivery in the age group between 18 and 30 years[7,8]. Caesarean deliveries were mostly present in the age group between 18 and 30 years in public care and between 31 and 40 years in supplementary health[9]. This result corroborates with studies that bring maternal age as one of the main contributing factors to the choice of caesarean section as the mode of delivery. More and more, women have their children later. Later pregnancies can be explained by different reasons, such as greater dedication to study and profession, the higher purchasing power of women, high availability of contraceptive methods, in addition to late marriages and choice of "ideal" partners. Consequently, there will be sufficient financial resources to pay for this assistance and for the medical decision in view of the possible co morbidities presented by the pregnant woman. Study done by Lee et al in 2016, findings were that individuals with lower socioeconomic status (LES) tend to receive prenatal care less frequently and are at higher risk for obstetric complications are consistent with the findings of previous studies. Individuals with low SES tend to be disadvantaged in terms of medical service utilization[10]. Pregnant women with low SES have been shown to have adverse obstetric outcomes associated with inadequate prenatal visits.

**Conclusion**

For Clinicians who are counseling young women, it is of importance to highlight the need of antenatal care and its benefit. There is need for individualizing antenatal surveillance programmes and obstetric care based on age, socio-economic strata and how to council illiterate and educated person is need of the hour. Because younger patients from low socio-economic strata are illiterate and are unable to

understand complications of pregnancy and not coming for antenatal care and don't understand need of hospital delivery leading to complications like PIH, anemia, APH, PPH leading to increased number of preterm births and increased ICU and NICU admissions and high mortality.

#### References

1. Singh D, Goli S, Parsuraman S. Association between obstetric complications & previous pregnancy outcomes with current pregnancy outcomes in Uttar Pradesh, India. *Indian J Med Res.* 2014; 83-90.
2. Bayrampour H, Heaman M. Advanced maternal age and the risk of cesarean birth: a systematic review. *Birth.* 2010; 37(3): 219-26.
3. Kenny LC, Lavender T, McNamee R, O'Neill SM, Mills T, Khashan AS. Advanced maternal age and adverse pregnancy outcome: evidence from a large contemporary cohort. *PLoS One.* 2013;8:e56583.
4. Shan D, Qiu PY, Wu YX, Chen Q, Li AL, Ramadoss S, et al. Pregnancy outcomes in women of advanced maternal age: a retrospective cohort study from China. *Sci Rep.* 2018;8:12239.
5. Laopaiboon M, Lumbiganon P, Intarut N, Mori R, Ganchimeg T et al. Advanced maternal age and pregnancy outcomes: a multicountry assessment. *BJOG.* 2014;121(Suppl 1): 49-56.
6. Nair M, Ariana P, Webster P. What influences the decision to undergo institutional delivery by skilled birth attendants? A cohort study in rural Andhra Pradesh, India. *Rural and Remote Health.* 2012;12:2311.
7. Shrestha SK, Banu B, Khanom K, et al. Changing trends on the place of delivery: why do Nepali women give birth at home? *Reprod Health.* 2012;9:25.
8. Mohammed S, Bonsing I, Yakubu I, Wondong WP. Maternal obstetric and socio-demographic determinants of low birth weight: a retrospective cross-sectional study in Ghana. *Reproductive health.* 2019;16(1):70.
9. Goli S, Rammohan A, Singh D. The effect of early marriages and early childbearing on women's nutritional status in India. *Maternal and child health journal.* 2015;19(8):1864-80.
10. Lee SH, Lee SM, Lim NG, Kim HJ, Bae S-H, et al. Differences in pregnancy outcomes, prenatal care utilization, and maternal complications between teenagers and adult women in Korea: a nationwide epidemiological study. *Medicine.* 2016;95:e4630.

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