ORIGINAL ARTICLE

Perinatal Outcome in High Risk Pregnant Women According to Antenatal Attendance at a Tertiary Hospital

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ABSTRACT

Objective: To analyze the perinatal outcome in two categories of patients on the basis of number of antenatal visits to three or less against more than three visits.

Study Design: Prospective analytical study.

Setting: Obstetrics & Gynaecology Unit II, Civil Hospital Karachi.

Methods: One hundred and twenty patients who attended high risk pregnancy clinic for one or more times during pregnancy, were prospectively followed till delivery for comparison of perinatal outcome in patients attending for three or less visits against more than three antenatal visits Outcome measures were analyzed by 'z' test and Fischer's exact test with a level of significance <0.05

Results: Perinatal mortality rate (PNMR) was **61.22/1000** in group A (three or less visits) versus **14.08/1000** in group B with more than three visits($p>0.05$). There was no significant difference in other pregnancy outcomes between the two groups but neonatal admission rate was significantly high in group A ($p<0.05$). Overall PNMR of the study population and that of group B was significantly lower than the annual PNMR of the department ($p<0.05$).

Conclusion: Minimal antenatal attendance adversely affects perinatal outcome in high risk pregnant women as compared to regular antenatal attendance with more than three visits.

Key Words: Antenatal care, high risk pregnancy, perinatal mortality.

INTRODUCTION

Antenatal care is a basic component of maternal care which is of major importance for the life of mothers & babies. World Health Organization (W.H.O) has defined antenatal care as a dichotomous variable, having one or more visits with a trained person during pregnancy.[1] Several Studies have identified link between lack of antenatal care and maternal mortality, poor maternal & neonatal health.[2-4]

According to WHO estimates 529,000 women died from obstetric causes in the year 2000 and 67% of these deaths occurred in South East Asia and Subsaharan Africa.[2,5]In contrast, the western and Northern Europe maternal mortality rate is around 10/100,000[6] live births. Maternal mortality ratio in

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Pakistan is estimated to be 276/100,000[7] births while according to hospital based studies in public sector hospital perinatal mortality rate(PNMR) is 97.7/1000 to 100.7/1000 total births.[8] Nordic countries have the lowest perinatal and maternal mortality i.e 4-7/1000 births.[9] Still birth rates are 3-5/1000 in developed countries in contrast to 100/1000 in developing countries.[10]Antenatal care is designated as one of the four pillars of safe motherhood initiative and the knowledge about danger signs in pregnancy is increased in women who utilize antenatal care.[11] The process of antenatal care and management of pregnancy[12] depends on identification of risk factors at first antenatal attendance and then pregnancy being classified as low or high risk pregnancy A high risk pregnancy is the one in which chance of adverse outcome to mother or baby is greater than general pregnant population.[13]

Teenage and maternal age 35 years or more, previous adverse outcomes in pregnancies previous still births & neonatal deaths have higher chances of unfavourable pregnancy outcomes.[14] A local study by Majeed R, et al identified antepartum and intrapartum factors such as maternal hypertension, antepartum hemorrhage, meconium stained liquor, multiple births, prolonged rupture of membranes and anemia are important in causing neonatal encephalopathy.[15] Post term pregnancy is also a recognized risk factor.[16] According to local studies bad obstetrical history, anemia, grandmultiparity & its association with advanced age, preterm births, malpresentations, multiple pregnancy, prelabour rupture of membranes and postpartum hemorrhage are important risk factors for adverse pregnancy outcome in our population.[17-18] One of the important tasks of antenatal care is to reduce perinatal mortality.[19] The recommended number of antenatal visits in different countries range from 8-13.[20-21] Studies have identified link between lack of antenatal care and poor pregnancy outcome including neonatal mortality.[22-23]According to Pakistan demographic health survey 2006-7, 61% mothers consult health professional, doctor, nurse or a lady health visitor, at least once for antenatal care while only twenty eight percent (28%) women make four or more prenatal visits throughout pregnancy.[7] There is lack of individualization of care for low and high risk pregnant women in public sector hospitals. Tertiary care hospitals face the problems in management of patients because of illiteracy, decreased awareness among women of high risk conditions during pregnancy, late antenatal attendance, missed visits, non compliance, unorganized health network,delay in timely referral to the consultant and increased workload. All these factors make antenatal management more difficult. WHO recommends minimum four antenatal visits during pregnancy. [1] There is no study, regarding comparison of perinatal outcome according to number of antenatal visits in high risk pregnancy clinics of public sector hospitals catering to the lower socioeconomic class. Aim of our study was to analyze perinatal outcome in high risk pregnant patients despite practical problems of minimal number of antenatal visits and late attendance.

SUBJECTS AND METHOD

Study Population & Setting: Study was conducted over a period of six months from 1st july 2008 to 31st December 2008 at Obstetrics and Gynaecology Unit II, Civil Hospital Karachi(CHK). It was a prospective analytical study.

One hundred and twenty patients who registered and delivered at obstetrics Unit II, CHK, were selected for study by non probability purposive sampling, irrespective of their number of antenatal visits and booking gestational age. Patients were prospectively

followed till delivery to find out pregnancy outcome. Comparison of perinatal outcome was done between group A which constituted patients who had ≤3 visits and group B which constituted patients who had >3visits.

OPERATIONAL DEFINITIONS

High risk pregnancy was defined as the one with risk factors such as high parity ≥5, severe anemia, previous caesarean section, high blood pressure, diabetes, other medical disorders with pregnancy, recurrent miscarriages or preterm deliveries, maplresentation, postpartum haemorrhage and placenta previa.

Main outcome measures were still births, perinatal mortality rate, intrauterine growth restriction, preterm births, constitutionally small babies and admission to neonatal intensive care unit (NICU). **Stillbirth** was defined as birth of babies weighing 500gram or more who did not show sign of life.[24] (heart beat, respiration, umbilical cord pulsation) **Perinatal mortality rate** was defined as number of stillbirths and neonatal deaths within seven days of life per 1000 live births and stillbirths.[25] **Intrauterine growth restriction** was defined as birth weight less than 10th centile for gestational age due to pathological factors.[26]

Preterm birth was defined as birth after the age of viability (24weeks) and before 37 weeks of pregnancy.[27]

Constitutionally small babies were defined as those with birth weight less than 10th centile for gestational age due to their normal genetic influences, in the absence of pathological factor.[26]

Data Collection

Data was collected by a semistructured proforma through details of antenatal record and prospective follow up on patient's admission in antenatal period and at delivery. Data was analyzed by SPSS version 10.Means, percentage and frequencies of relevant variables were calculated , tests of statistical significance applied. Continuous variables were analyzed by frequency and percentages, whereas categorical variables were analyzed by Fischer's exact test and Z test, where applicable. Level of significance was taken as <0.05.

RESULTS

Age of the patients ranged from 18-40 years.(Fig.1) **Mean age** of patients was **27.4years** ±4.83 S.D. The most frequent age group was 18-25 years **44.16% n=53**

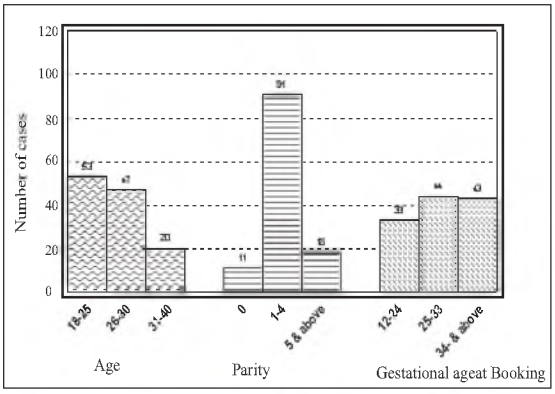

Figure –1 : Age, parity and booking gestation groups in the study population

Patients' **parity** ranged from 0 to 10. **Mean parity** was **2.5±1.94** S.D. **Primi**gravida were **9.17% n=11** and the most frequent parity was **para 1to 4** i.e, **73.3% n=91**. Grandmultipara (parity 5 or more) 15 % n=18(Fig. 1)

Mean gestational age at first antenatal visit was **28.7 ±7.97 S.D**. 35.83% n=43 attended for first antenatal visit after 34 weeks of gestation(Fig. 1) **Mean gestational age at delivery** was **38.15 ±5.83SD**

Table 1: Comparison of perinatal outcome between the two groups

OUTCOME MEASURES	Group A* n=49(40.83%)	Group B** n=71(59.16%)	P value
PNMR*	61.22/1000	14.08/1000	0.101◊
Stillbirths	6.12% n=3	1.40% n=1	0.185•
IUGR	6.12% n=3	5.63% n=4	0.602•
Preterm birth	6.12% n=3	2.81% n=2	0.329•
Constitutionally small	-	1.40% n=1	0.592•
N.I.C.U admission rate	12.24% n=6	8.45% n=6	0.000144◊

*PNMR: Perinatal mortality rate NICU: Neonatal intensive care unit
* ≤ Three visits ** > Three visits
◊P value calculated by Z test •p value calculated by Fischer's exact test

Table 2: Comparison of Perinatal mortality rate of study population with annual PNMR of the year 2008

Category	PNMR of Study population	Annual PNMR for the year 2008∔	p value◊
Overall PNMR	33.33/1000*	79.10/1000	0.0417
Group A**	61.22/1000	79.10/1000	0.238
Group B***	14.08/1000	79.10/1000	0.0043

∔Annual perinatal mortality rate of the department for the year 2008
* Perinatal mortality rate of all cases included in the study
** ≤ three visits. *** > three visits
◊p value calculated by Z test

Overall Perinatal mortality rate was **33.33/1000** which was significantly lower than our unit's PNMR for the year 2008($p<0.05$) Comparison between two groups on the basis of number of antenatal visits to three or less against more than three visits was done.(Table i) In group **A i.e three or less than three antenatal visits(n=49,**40.83%) the **perinatal mortality** rate was **61.22/1000,** while **in group B i.e more than three visits,** it was **14.08/1000** ($p>0.05$) When compared with perinatal mortality rate of Gynaecology and Obstetrics Unit II, C.H.K for the year **2008 (79.10/1000)** PNMR was significantly decreased in group **B** ($p<0.05$) whereas though lower, but it was not significantly decreased in group **A** (Table 2).

The number of stillbirths in group **A** was 03, Among these, in the first case, patient had only single visit at 36 wks and previous CS due to cephalopelvic disproportion and she was presented with obstructed labour, while in second case, only one visit in 32 weeks with missed follow-ups and the cause of stillbirth was severe IUGR. In the third, early onset of severe PIH diagnosed on booking visit at 29 weeks and severe IUGR caused Intrauterine death(death of fetus in utero prior to onset of labour) at 32 weeks of pregnancy. There was one stillbirth in group **B,** patient had bad obstetrical history and gestational diabetes, booked at 14 weeks of pregnancy, had regular visits but she stopped taking insulin at 34 weeks and missed her follow up till 36 weeks; she reported with intrauterine death. **Other adverse perinatal outcomes** in these two groups were also not statistically different except NICU admission(Table 1), There was no neonatal death in either group but there was significant difference($p<0.05$) in the neonatal intensive care admission rate between group A and B. Maternal outcome was not significantly different between the two groups ($p=0.397$) In group **A,** one patient had caesarean hysterectomy for uncontrollable haemorrhage at C.S for placenta previa major (2.04% n=1) while in group **B,** it was 1.40% n=1. In this group also caesarean hysterectomy was done due to placenta accreta at caesarean section in a patient with previous 4 C.S.

DISCUSSION

Civil hospital Karachi is a public sector tertiary care hospital. Patients coming here belong to the lower socioeconomic class or lower middle class with majority of women being illiterate. Around 1200-1500 new cases enroll to seek antenatal care each year in our unit and majority of them having high risk pregnancy. The number of deliveries at our unit was 2236 in the year 2008 as the number of unbooked

cases and referred cases were also quite high. **Mean age** was 27.4 years but the most frequent age group was 18-25 yrs, which correlates with early childbearing, being a norm in our society. **Mean parity** was **2.5±1.94SD**.Whereas the most frequent parity was 1 to 4, while generally it is considered to be the safest parity group but they were all having high risk pregnancy. As shown in our data that the **mean booking gestational age** was **28 weeks**. Patients included in group A who first time attended clinic **after 34 weeks** were **35.83% (n=43).** Out of them 41.86% (n=18) first time attended clinic after 36 weeks of pregnancy. These also include 5 patients (27.27%) of previous 2 or 3 caesareans and 3 patients with sever PIH.

This high percentage of first attendance at term, shows lack of awareness and obstacles in seeking antenatal care.

Comparison according to the number of antenatal visits revealed higher perinatal mortality(61.22/1000) among group **A** i.e three or less than three visits as compared to **group B** with more than three antenatal visits having perinatal mortality rate of **(14.08/1000)** but this difference was not statistically significant ($p > 0.05$), which may be due to smaller sample size of group A as compared to group B. In group A majority were late attenders & non compliant 93.87% (n=93) visited first time after 34 weeks of gestation whereas 12.24% (n=6), did report before 34 weeks but did not return for follow up after one or two visits. As compared with department's PNMR of 79.10/1000, PNMR of group A, though lower was not statistically different ($p>0.05$). The number of still births in group **A** was three. One with severe early onset PIH who was booked at 29 weeks but had intrauterine death at 32 weeks of pregnancy because of severe IUGR and this patient had only two antenatal visits. Second still birth was in a patient with previous CS due to cephalopelvic disproportion with single visit at 38 weeks who declined admission for CS on same visit and later came with obstructed labour. Third still birth was also in a patient who had two visits prior to 32 weeks but failed to return thereafter and had stillbirth due to IUGR. In these three cases the cause of stillbirth was IUGR due to severe PIH in 33.33% (n=1), IUGR due to unknown cause in 33.33% (n=1) and IUGR due to mechanical factor in 33.33% (n=1).

Comparison of PNMR of group B with department's PNMR of 79.10/1000 revealed it to be significantly lower ($p < 0.05$) In group **B** there was only one stillbirth**,** the patient had bad obstetrical history, along with asthma and gestational diabetes. She was booked at 14 weeks of pregnancy, had regular visits but she stopped insulin at 34 weeks and missed follow up till 36 weeks, when she was diagnosed to have intrauterine death, one week prior to her planned CS. In group B, the cause of stillbirth was Diabetes as previously discussed. This unfortunate happening reflects the lower level of risk appreciation in our illiterate pregnant women. In overall study population, in 50% cases cause of stillbirth was severe intrauterine growth restriction where as diabetes and mechanical factor (obstructed labour) causes were 25%, each. In group **A,** IUGR was found in 6.12% of cases (n=3), the cause was severe PIH in 66.66% and in 33.33%, it was unexplained, while in group **B** the cause was Severe PIH in 25%, Monochorionic twin pregnancy in 25%, and unexplained in 50 % of cases. Preterm births were higher in group A than in group B, however this difference was not statistically significant. The causes of preterm delivery in group A were iatrogenic, preterm delivery with severe PIH, grandmultipara with prelabour rupture of membranes along with breech presentation and previous 3 CS

during labour at 34 weeks. Whereas preterm labour in group B were due to twin pregnancy and previous single C.S with impeding rupture. In group **B** one baby was constitutionally small as maternal weight was 38 kg at delivery and height was 148 cm. Neonatal intensive care unit (NICU) admissions showed significant difference between the two groups($p<0.05$). In group **A**, out of 6(**12.24%**) admissions; n=2(4.08%) babies had birth weight less than 2Kg, n=2(4.08%) had severe IUGR, n=1 (2.04%) due to meconium aspiration, as patient had bad obstetrical history and missed her date for elective CS and presented with PROM and n=1(2.04%) due to birth asphyxia in patient with severe PIH who presented with abruptio placentae. In group **B**, out of 6 (**8.45%**) NICU admissions, n=3 (4.22%) were due to IUGR, n=1(1.40%) was due to low birth weight, n=1(1.40%) was due to meconium aspiration and n=1(1.40%) was due to neonatal sepsis following prolonged rupture of membranes.

In our data 75% n=3 of all still births occurred in patients who had less than three visits and 66.66% of these didn't comply to medical advices.Similarly in regular attenders (with more than three visits) in group B, one patient had perinatal mortality and she also failed to comply medical advice at the crucial time of pregnancy. Thus excluding these cases only 1 patient among the study population had perinatal mortality who was compliant but booked at 29 weeks, had only 2 visits and presented with severe PIH and IUGR causing perinatal mortality causing a rate of 8.33/1000. Caesarean hysterectomy was the only maternal morbidity among the two groups . The patient in group **A** was admitted on her only visit at 38 weeks due to diagnosis of placenta previa major and severe haemorrhage who had caesarean section and lead to hysterectomy. While in group B patient had previous 4 CS and was antenatally diagnosed as having placenta accreta. Our data shows a trend that those women who had less than three visits are also late attendants & non compliant and they do not appreciate the risks in pregnancy. Prompt and relevant management at tertiary hospital even with late attendance results in relatively better perinatal outcome than general perinatal outcome in public sector tertiary hospitals (as shown by PNMR of 61.22/1000 vs 79.10/1000) but with late and minimal antenatal attendance and non compliance there is little time for management of significant multiple problems as undue increase workload, may result in deficient care. Overall Perinatal mortality rate was significantly lower i.e (33.33/1000) than the perinatal mortality rate of our unit in the year 2008 which was 79.1/1000 (p value 0.00417) and depicted an almost similar grim picture of other tertiary care hospitals of Pakistan which have shown perinatal mortality rates of 97.2/1000 to 100.7/1000 · There were 4 still births but no neonatal death. There was no maternal mortality but two patients had caesarean hysterectomy due to placenta previa major with morbid adherence. Our study's limitation is that it did not take into account those regular or minimal attendants of our antenatal clinic who did not deliver at our unit and thus their outcome is unknown which might have influenced the results.

CONCLUSION

Minimal or late antenatal attendance & non compliance are major contributors to adverse pregnancy outcome despite best possible care provided at a tertiary care hospital. Two out of three stillbirths in minimal attendance goup (A) and only one stillbirth in group B were avoidable. This study reveals the issue that it is illiteracy & poor level of

understanding among patients attending public sector hospitals that does not yield expected beneficial results of comprehensive care provided to them at tertiary hospital. It reaffirms the dire need that antenatal services coverage is maximized with emphasis on quality training programs for midwives to enable them to deliver effective antenatal care and to identify obstetric problems such as hypertension, antepartum haemorrhage, severe anemia, malpresentations and cephalopelvic disproportion and early referral in complicated cases.

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