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## Maternal complications among tribal women in a tertiary care centre

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### Abstract

**Back ground:** Tribals constitute 1.5% of the total population of Kerala. They live in a deprived condition and are vulnerable to numerous health problems. Eventhough the health indices of Kerala are comparable to many of the developed countries, the condition of tribals are still unsatisfactory. Aim of the study is to identify the maternal complication among tribal women and to analyse the fetomaternal outcome.

**Methods:** This is a retrospective cross sectional study conducted in the Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode during the period 1<sup>st</sup>January to 31<sup>st</sup> December 2019. Tribal women admitted with maternal complications were identified from the hospital records and analyzed in detail.

**Results:** 210 patients were included in the study. 93.8% women had received effective antenatal care. Common complications were preterm labour(50.73%), hypertensive disorders (28.57%), anemia (29.5%) and IUGR(29.5%). The average birth weight of the newborn was 2.23 kg.

**Conclusion:** Eventhough majority of the tribal women gets effective antenatal care, prevalence of maternal complications like hypertensive disorders, anaemia, preterm labour and intrauterine growth restriction are more prevalent among them.

**Keywords:** Tribals, deprived condition, maternal complications, feto maternal outcome

### Introduction

Tribals are the original inhabitants of our country. They live in the natural environment in a deprived condition. India has the second largest tribal population in the world after Africa (Richard Scaria *et al.* 2013) <sup>[1]</sup>. According to the Census of India (2011) the Scheduled Tribes constitute 1.5% of the total population of Kerala. Most of them live in Wayanad district. The health indicators of Kerala are comparable with that of western countries. But the tribes in Kerala live in a very poor background. They are vulnerable to numerous health problems. Poverty, malnutrition and illiteracy contribute to high morbidity and mortality. Kannan *et al.* 1991 <sup>[2]</sup>, in their study showed that low socioeconomic classes including tribes have high death and birth rates. A study conducted in Attappadi, Palakkad among tribal population revealed that majority of them live in severe poverty. (Richard Scaria *et al.* 2013) <sup>[1]</sup>

Child marriage and adolescent pregnancies are much prevalent in tribal population. Lack of awareness and accessibility of family planning methods contributes to high parity among them. Pregnant women and lactating mothers were found to be suffering from chronic malnutrition and anemia associated with high infant mortality rates (Dr. Iqbal *et al.* 2013) <sup>[3]</sup>. Anaemia is more prevalent in tribal population. Both nutritional and hereditary anaemia are common in tribal women. It is a direct and indirect cause for maternal morbidity and mortality. Poor nutrition and lack of antenatal care contribute to high prevalence of preeclampsia. Lack of adequate healthcare facilities lead to late detection of many of the complications that develop during pregnancy. A large number of tribal women are referred to higher centres with such complications.

Government medical college, Kozhikode is an institution where more than 15,000 deliveries occur per year. The northern districts of Kerala mainly depend on this referral institution. The tribal women from Wayanad, Kannur, Malappuram Palakkad and border districts of neighboring states are referred to this hospital. The objective of the study is to identify the maternal complications and analyze the fetomaternal outcome among tribal women admitted in this institution during the year 2019.

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**Material and Methods**

This is a retrospective cross sectional study, conducted in the Department of Obstetrics and Gynaecology, Govt. Medical College, Kozhikode from 1<sup>st</sup> January 2019 to 31<sup>st</sup> December 2019.

**Sample size**

Expecting a 30% prevalence of hypertensive disorders among tribal patients, the sample size required for 95% confidence level and 10% error was 84.

**Inclusion criteria:** Tribal women admitted in the Obstetrics and Gynaecology Department of Govt medical college, Kozhikode with antenatal complications during the year 2019.

**Exclusion criteria:** Nil

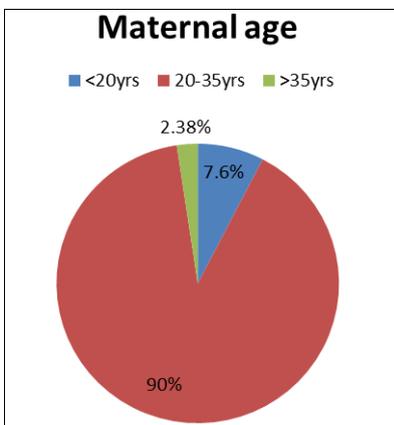
Tribal women referred to Government medical college due to various maternal complications from periphery were included in the study. Those who were attending the antenatal clinic of medical college developing any complications during this period also were included. Using a predesigned proforma details were collected from the case records and various inpatient registers. The condition of the patient at the time of admission, treatment given from periphery, course in the hospital, management, mode of labour, intrapartum and postpartum complications, neonatal outcome etc. were collected and analyzed.

**Statistical analysis:** Qualitative data are expressed as numbers and percentage and quantitative data as mean and standard deviation.

**Ethical concerns:** Protocol of this study was submitted to the Ethical committee of Govt. medical college, Kozhikode and the study was conducted after getting approval from the Ethical committee.

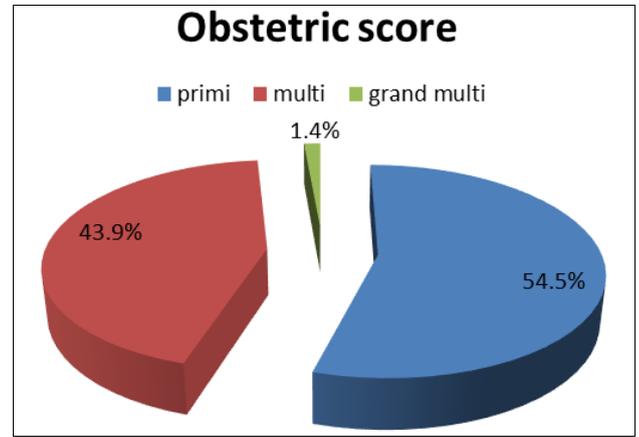
**Results**

A total of 210 cases were studied. Regarding the maternal age, 16 women were in their teenage (7.6%) and 189 (90%) belonged to age group 20 to 35 years. Only five patients were above the age of 35 years. (Figure:1)



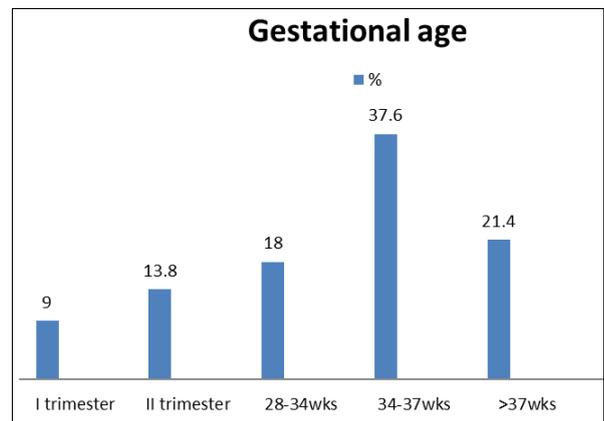
**Fig 1:** Distribution of patients in different ages

Majority of the patients were from Wayanad district (92 patients). 43 were from Kannur. 36 patients were from Calicut and 32 were from Malappuram. When the obstetric score was analyzed there were 113 primi gravidae (54.5%) and 91 multigravidae (43.9%). Only three grand multies were there (1.4%). (Figure;2). 3 patients were in the postpartum period.



**Fig 2:** Distribution of patients according to obstetric score.

9 patients were in their first trimester (9%). 29 were in 2nd trimester (13.8%) and 38 patients were between 28 and 34 weeks (18%). Majority of the patients were between 34 and 37 weeks ie 79(37%) and 45 were above 37weeks (21.4%). (Figure:3)



**Fig 3:** Distribution of patients in different age group

197 patients had regular antenatal visits (93.8%). 13 women (6.2%) had received only irregular antenatal care. Most of them were not taking hematinics also. The average BMI of the women admitted after 34 weeks of gestation was 23.01. Out of 140 deliveries 80 were vaginal birth (57.1%) and 60 were cesarean section (42.85%). 16 were emergency and 44 were elective sections. Common indications for primary cesarean section were severe pre eclampsia and IUGR. Cesarean rate was 42.85%. (Table 1)

**Table 1:** Mode of labour

Vaginal Delivery- 80 (57.14%)		LSCS – 60 (42.85%)	
Induced	Spontaneous	Elective	Emergency
54 (67.5%)	26 (32.5%)	16 (26.67%)	44 (73.33%)

71 patients had pre term delivery(50.73%). 38 patients delivered vaginally (53.5%) and 33 had to undergo cesarean section (46.2%). Most common cause of prematurity was early termination due to hypertension complicating pregnancy (36.6%) and the next cause was intrauterine growth restriction (19.7%). There were 60 patients admitted with hypertension(28.57%). Of this 34patients (16.9%) had severe preeclampsia. 14 patients were admitted with high blood pressure and impending symptoms. Four patients had

antepartum eclampsia, three were admitted with HELLP syndrome. Three patients had abruption of placenta. 62 patients had anemia (29.5%). Of this 36 (64.5%) were mild anemia. 18 patients (24.1%) had moderate anemia and 8 patients (11.2%) had severe anemia. Sick cell anemia was common among the patients. Eight patients had sickle cell disease and 10 had sickle cell trait which contributed to 29% of the total anemic patients. There was one case of beta thalassemia also. There were 62 patients with intruterine growth restriction (29.5%). 30 patients had gestational diabetes mellitus (14.2%). Regarding viral infections, there were 15 patients with hepatitis B infection (7.14%). One patient had hepatitis A infection and another one had HIV infection. There was one patient with chicken pox as well. 5 patients were admitted with heart disease (2.38%). Three of them had congenital heart disease, 2 cases of ASD and one case of PDA. Two had rheumatic heart disease, severe aortic regurgitation. 6 patients were detected to have hypothyroidism. Prevalence of maternal complications are shown in figure 4.

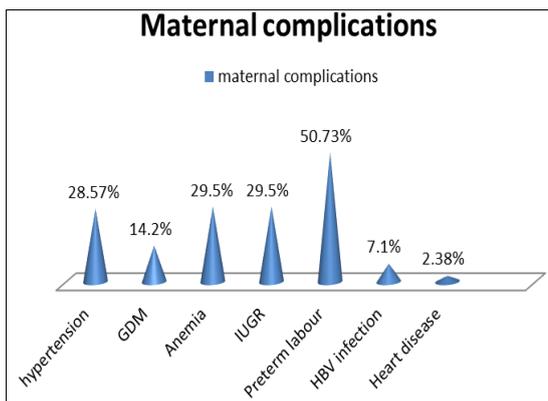


Fig 4: Prevalence of maternal complications

7 patients had postpartum complications. One had retained placenta, and another one with puerperal sepsis. Four patients had postpartum hemorrhage. Three were atonic postpartum hemorrhage and one traumatic. Out of 145 babies 74 were males and 71 were females. 140 babies were born alive. There were 5 intrauterine demise also. Common cause for intrauterine demise was severe IUGR. There were 6 neonatal deaths. Average birth weight of the babies were 2.23 kg. There were 101 babies below 2.5 kg (57.2%), of which 18 were below 1.5 kg(12.4%). 40 were between 2.5 and 3.5 kg(27.5%). Only four babies were above 3.5kg(2.75%). (Figure:5). There were eight cases of congenital anomalies (3.8%). 2 cases were congenital heart disease and 2 had congenital diaphragmatic hernia. Three babies had multiple congenital anomalies. Two cases of multiple congenital anomalies were detected late as ultrasound was not done timely.

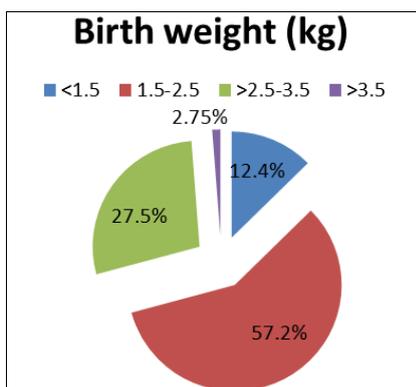


Fig 5: Distribution of birth weight

19 patients were admitted with first trimester complications. Two patients had pregnancy of unknown location. Two of them had tubal pregnancy. One had a scar ectopic. Two patients were admitted with hyperemesis gravidarum. 8 patients were admitted with threatened miscarriage. Two had missed miscarriage also. First trimester pregnancy failure including ectopic were 10 (4.76%). Table (2)

Table 2: Pattern of first trimester complications

First Trimester Complications	
Pregnancy of unknown origin	2
Ectopic pregnancy	3
Missed miscarriage	2
Hyperemesis gravidarum	2
Threatened abortion	8
Inevitable abortion	3

One patient was admitted at 14 weeks with septic abortion. There was one case of cervical incompetence in 2nd trimester. Patients referred with threatened pre term labour, anemia, hypertension and gestational diabetes remote from term were conservatively managed and discharged.

**Discussion**

Most of the tribal population live in hilly and inaccessible areas and are characterized by extremely low literacy and humble economy. Health care promotion activities are also sub optimal in these areas. All these contribute to increased maternal and fetal morbidity. They follow their own customs and rituals. Adolescent pregnancy is common among the impoverished, poorly educated and rural girls all over the world [4]. Teen age pregnancy was 7.6% among tribals in this study. This is almost same as that of general population in India. According to 2015-16 National Family Health Survey (NFHS)-4 data, 7.8 percent of women aged 15 to 19 are pregnant or mothers. The incidence of teenage pregnancy in our institution was 6.3%.

Regarding the gestational age of referral, most of them were in the the gestational age 34-37 weeks. This may be because the major problems like IUGR and gestational hypertension usually develop during this period. In this study 93.8% patients had received antenatal care. In another study conducted in Karnataka, among tribal women of the reproductive age group in Kodagu district [5], only 58.0% of the tribal women had utilized the minimum desired ANC services. According to Moosan H et al<sup>6</sup> 100% of tribal and nontribal mothers utilized antenatal services in Kerala, but the effective utilization of antenatal care services (4 or more antenatal visits) [7] was not seen in 5.6% of tribal mothers (P< 0.03).

Cesarean rate in Kerala is 35.8% in (NFHS 4). Cesarean rate of the institution during the year 2019 was 38.6%. But in this study cesarean rate is 42.85%. This high cesarean rate is due to the increased incidence of IUGR and hypertensive disorders. Low birth weight is considered to be a predictor of protein energy malnutrition [8]. The average birth weight of the newborns in this study was 2.23kg. According to Krishnan KD *et al.* [9] the average birth weight of Indian babies is 3.07 kg. There is an obvious reduction in the birth weight of tribal newborn.

Obstetric haemorrhage, maternal sepsis, abortion, hypertensive disorders including pre-eclampsia, eclampsia and pregnancy-induced hypertension and obstructed labour are the common pregnancy related complications [10, 11]. Among rural population in India, pregnancy induced hypertension is the common medical disorder in pregnancy next to anaemia [12]. The prevalence of hypertensive disorders of pregnancy in India has

been reported as 6-8% [13]. The incidence of pregnancy induced hypertensive disorders among tribals in this study is 28.57% with severe pre eclampsia in more than 50%. The incidence of hypertension in our institution during 2019 was 15.32%. It shows a significant increase in the incidence of hypertensive disorders among tribal mothers. In another study conducted in Gujarat, Sachdeva *et al.* [14] reported 15% incidence of pregnancy induced hyper tension among women from rural background.

Anaemia is a major contributor of maternal mortality in India and other south east asian countries [15]. The prevalence of anemia among tribals varies in different studies. A cross sectional survey done in Wayanad district of Kerala showed high prevalence of anaemia (96.5%) among tribal women [16]. Both nutritional and sickle cell anaemia are prevalent among the tribals of Wayanad district. In another study by Suryanarayana R *et al.* the prevalence of anaemia among tribals is 61.6% [17]. The prevalence of anaemia in this study is 29.5%. This could be due to the correction of anaemia by consumption of haematinics during pregnancy. 29% of them were having sickle cell anaemia. The prevalence of anaemia in the institution was 16.11%.

90% of the premature births occur in the developing countries of Africa and Asia where majority of the socioeconomically underprivileged women live [18]. An important finding of this study was the high incidence of preterm labour ie 50.73%. Severe pre eclampsia with or without IUGR and IUGR alone were the common causes for early termination of pregnancy. According to Lakshmi *et al.* 60% of the fetal growth restriction were born before 37 weeks [19]. The premature birth rate of the institution was 17.94%.

Prevalence of gestational diabetes in Kerala ranges from 15.9-17% [20]. The prevalence of gestational diabetes in our institution was 24.74% during 2019. According to Mohan M A *et al.* [21] prevalence of gestational diabetes in a tertiary care hospital in Kerala was 15.9%. But among tribals the prevalence was only 14.2%. This may be because of the less prevalence of risk factors for diabetes in tribal women like obesity, sedentary working pattern, family history of diabetes, excess weight gain during pregnancy etc.

Another striking finding was the high prevalence of hepatitis B infection among tribals. Study from Odisha [22] shows a prevalence of 0.8 to 3.7% among primitive tribal groups. Studies conducted in different parts of India shows a wide range of prevalence varying from 2 to 65% [23-25]. The prevalence of hepatitis B infection in this study was 7.14% whereas the total prevalence of the institution was only 0.38%. Risk factors like tattooing, sharing of razor, body piercing, shaving by village barber etc are common among tribals [26].

The incidence of congenital anomalies were 3.8%. The worldwide incidence varies from 3 to 7% [27]. First trimester failure rate was 4.76% in our study. In the study Magnus MC *et al.* stated that the incidence of clinically recognized early pregnancy loss was 10% [28].

## Conclusion

The prevalence of complications like anaemia, hypertensive disorders, intrauterine growth restriction, premature labour etc are high among tribal population. Even though majority gets effective antenatal care, improvement in the socioeconomic condition and literacy rate are also required for a better fetomaternal outcome.

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