

# Frequency of Jaundice in Pregnancy and its Maternal and Fetal Outcome

SAHRISH KANWAL<sup>1</sup>, ANEELA HABIB<sup>2</sup>, AMINA BEGUM<sup>3</sup>, UROOJ NAZ<sup>4</sup>, SAIMA ALI<sup>5</sup>, SARHA KAZI<sup>6</sup>

<sup>1</sup>RMO, Liaquat University of Medical and Health Sciences Jamshoro

<sup>2</sup>Assistant Professor, Dow University of Health Sciences Karachi

<sup>3</sup>MBBS, FCPS, RMO "CDF hospital Hyderabad"

<sup>4</sup>MBBS, FCPS, Senior Registrar, Dow University of Health Sciences Karachi

<sup>5</sup>FCPS PG Trainee and WMO, Dr. Ruth K.M Pfau Civil Hospital Karachi

<sup>6</sup>Professor (Obs & Gynecology) Dow University of Health Sciences Karachi

Corresponding author: Sahrish Kanwal, Email: [sahrishjokhio7@gmail.com](mailto:sahrishjokhio7@gmail.com), Cell: +92-332 2553340

## ABSTRACT

**Background:** During pregnancy, jaundice is important medical disorder more commonly seen in developing countries than developed one. Jaundice in pregnancy carries a grave for both the fetus and mother. This study is design to identify the frequency of jaundice in pregnancy and its maternal and fetal outcome to establish current local data for other health care providers.

**Aim:** To determine the frequency of jaundice in pregnancy and its maternal and fetal outcome.

**Study Setting:** This was a descriptive case series study conducted at the department of Obstetrics and gynecology of Civil hospital Karachi for the duration of 6 months from July 2018 to January, 2019.

**Subject and Methods:** A total of 507 pregnant women were included in this study. The frequency of jaundice in pregnancy and its maternal and fetal outcome data was documented on pre designed proforma.

**Results:** - The average age of the women was 25.91±4.46 years. Frequency of jaundice in pregnancy was 8.28%. Hepatic encephalopathy, disseminated intravascular coagulation, atonic PPH and maternal mortality was significantly high in those pregnant women who had jaundice. Similarly fetal outcome, still birth was 20% (20/40%) in which fresh still birth and macerated still birth was 15% and 5% which were not statistically significant while all were late neonatal death and which was significantly high in jaundice pregnant cases [45% vs. 9.7%; p=0.0005].

**Conclusion:** Jaundice in pregnancy is rare, but remains clinically important because of serious adverse effects on both the mother and the fetus. These disorders are complex and should be managed by experienced physicians in specialized centers.

**Keywords:** Jaundice, disseminated intravascular coagulation, Atonic PPH

## INTRODUCTION

Jaundice is defined as yellowish discoloration of skin and mucous membrane due to increase in serum bilirubin concentration (bilirubin >3mg/dl) [1]. jaundice in pregnancy is important medical disorder more commonly seen in developing countries than developed one [2]. Jaundice affect a small percentage of pregnant women. Jaundice in pregnancy carries a grave for both the fetus and mother and is responsible for 10% of maternal death [3]. Hepatic disorders complicate about 3% of all the pregnancies and fall under various categories. First is heterogeneous of liver disorders that are unique to pregnancy and occur in patients with previously healthy liver, these include intrahepatic cholestasis of pregnancy 60%, acute fatty liver of pregnancy and liver dysfunction associated with hyperemesis gravidum 50% and preeclampsia 12%. These condition remit spontaneously in puerperium. Secondly pregnancy may occur in background of a preexisting liver disease e.g. chronic viral hepatitis and cirrhosis of liver 1%. Third category is of common viral disease like acute viral hepatitis 49% which may occur incidentally during pregnancy. Fourth situation is that of disorders which are probably related to pregnancy e.g biliary tract disease 10% and budd- chiari syndrome [4]. Course of hepatitis is unaltered by pregnancy the exception is hepatitis E, where the pregnant women who contract the disease exhibit fatality rate of about 10 – 15 %. The most common cause of jaundice is viral hepatitis, hepatitis B 1.37% is most commonly involved. Early detection and management can prevent the dreaded complications of jaundice like hemorrhage and encephalopathy [5].

The incidence of jaundice is 3.97%

Maternal outcomes includes, DIC 5.8%, placental abruption 3.92%, PPH atonic 9.8%, hepatic encephalopathy 7.87%, maternal mortality 7.8% [3].

Fetal outcome include Alive birth 46.6%, still birth 22.2%, fresh still birth 8.8%, macerated still birth 4.44%, Early neonatal death 35.5%, late neonatal death 8.8% [3].

One of the hospital based study from India showed frequency of jaundice in pregnancy caused by hepatitis C is 6%.

Pregnancy causes a few alterations in result of standard liver tests. The aminotransferases (AST and ALT), gamma-glutamyl transpeptidase (GGTP), total bilirubin and serum bile acid level

remain within the normal range. Alkaline phosphatase rises modestly in the third trimester. The albumin level is lower than in non-pregnant women, and the cholesterol level higher thus elevations in aminotransferases or GGTP signify pathology and should prompt a search for disease [4].

Purpose of this study is to identify the frequency of jaundice in pregnancy and its maternal and fetal outcome, as there is no local data available. So the purpose of my study is to establish current local data on the basis of result of my study which was useful for other health care providers.

## MATERIAL AND METHODS

This was a descriptive case series study conducted at the department of Obstetrics and gynecology of Civil hospital Karachi for the duration of 6 months from July 2018 to January, 2019. Non probability consecutive sampling technique was used. By using open Epi sample size calculator taking the prevalence of jaundice in pregnant women 3.97% with margin of error 2% and confidence interval 95% then estimated sample size was 507.

### Inclusion Criteria:

1. Maternal age (women of reproductive age group 18-45 years)
2. Any parity
3. Gestational age (26wk to 42wks)

### Exclusion criteria:

1. Women with diabetes mellitus ( diagnosed on history and medical reports)
2. Women with cardiac disease (diagnosed on history and medical reports)

**Data Collection Procedure:** All the women fulfilling the inclusion criteria were assigned in study after taking informed consent. These include those admitted in labor ward of Gynae unit 2 Civil Hospital Karachi. The frequency of jaundice in pregnancy and its maternal and fetal outcome data was documented on pre designed proforma. All the assessment was done under supervision of consultant having greater than 5 year experience.

**Data analysis procedure:** Data was entered and analyzed through SPSS version 22. Mean standard deviation was

calculated for all quantitative variable like maternal age, parity , gestational age, apgar score, baby birth weight, BMI(body mass index). Frequency and percentage was calculated for qualitative variables , like maternal education, socioeconomic status, mode of delivery, gender of baby, low Apgar score <6/5, Jaundice, maternal and fetal outcome. Stratification of variable like maternal age, gestational age and parity, maternal education, BMI, socioeconomic status, mode of delivery, gender of baby, baby birth weight. Post stratification chi square test was applied taken p<0.05 as significant

**RESULTS**

A total of 507 pregnant women were included in this study. Most of the women were 21 to 30 years of age as presented in figure 1.

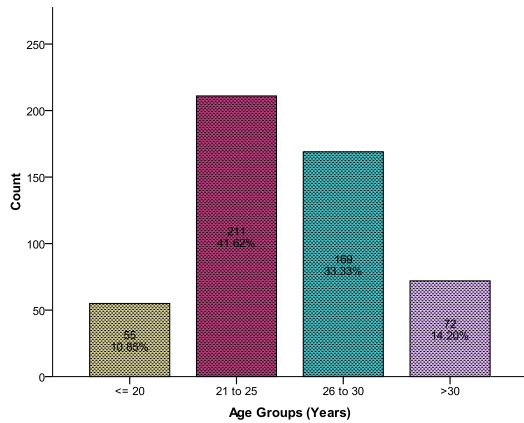


Figure 1: Age distribution of the patients n=507

The average age of the women was 25.91±4.46 years. Other demographic characteristics of the patients are shown in table 1.

Table 1: Descriptive statistics

Variables	Mean	Std. Deviation	95% Confidence Interval for Mean	
			Lower Bound	Upper Bound
Age (Years)	25.91	4.46	25.52	26.30
Weight (kg)	72.18	8.25	71.46	72.90
Height (cm)	156.15	6.61	155.58	156.73
BMI (kg/m <sup>2</sup> )	29.75	4.39	29.36	30.13
Parity	2.05	1.42	1.93	2.17
Baby birth Weight(kg)	2.48	0.61	2.43	2.542

Out of 507, 248(48.92%) were primiparous and 259(51.08%) multiparous (figure 2).

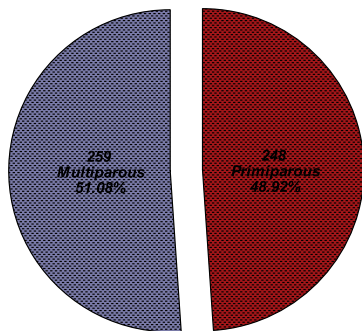


Figure 2: Parity distribution of the patients n=507

Normal vaginal delivery was observed in 375(73.96%), forceps and instrument delivery was observed in 50(9.86%) and cesarean section was 82(16.17%) as shown figure 3.

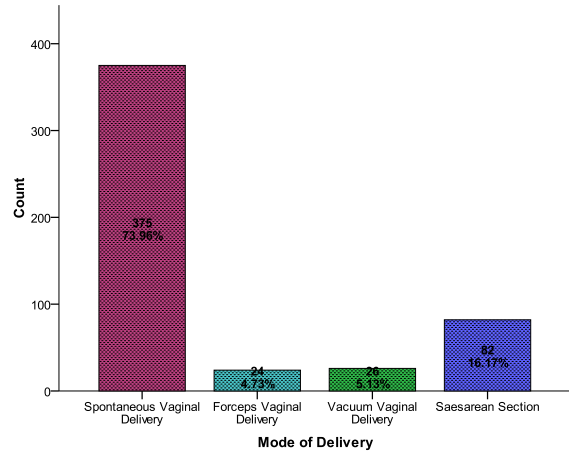


Figure 3: Mode of delivery n=507

In this study frequency of jaundice in pregnancy was 8.28% (42/507) as presented in figure 4.

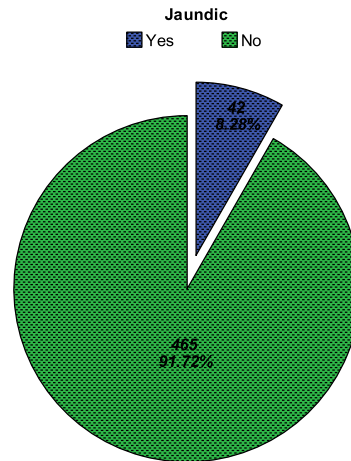


Figure 4: Frequency of Jaundice in Pregnancy n= 507

Regarding maternal outcome, hepatic encephalopathy, disseminated intravascular coagulation, atonic PPH and maternal mortality was significantly high in those pregnant women who had jaundice as show in table 2.

Table 2: Maternal outcome with and without jaundice pregnant women

Maternal Outcome	Jaundice In Pregnancy		Total 507	P- Value
	Yes n=42	No n=465		
Hepatic encephalopathy:	9(21.4%)	52(11.2%)	61(12%)	0.05
Disseminated intravascular coagulation	11(26.2%)	41(8.8%)	52(10.3%)	0.002
Placental abruption	2(4.8%)	4(0.9%)	6(1.2%)	0.081
Atonic PPH	13(31%)	9(1.9%)	22(4.3%)	0.0005
Maternal mortality:	10(23.8%)	12(2.6%)	22(2.6%)	0.0005

Similarly fetal outcome, still birth was 20% (20/40%) in which fresh still birth and macerated still birth was 15% and 5% which were not statistically significant while all were late neonatal death

and which was significantly high in jaundice pregnant cases [45% vs. 9.7%;  $p=0.0005$ ] as shown in table 3.

Table 3: Fetal outcome with and without jaundice pregnant women

Maternal Outcome	Jaundice In Pregnancy		Total	P-Value
	Yes n=40	No n=462		
Still Birth	8(20%)	127(27.5%)	135(26.9%)	0.305
Fresh Still Birth	6(15%)	56(12.1%)	62(12.4%)	0.615
Macerated Still Birth	2(5%)	71(15.4%)	73(14.5%)	0.074
Late Neonatal Death	18(45%)	45(9.7%)	63(12.5%)	0.0005

Stratification analysis was performed and observed that jaundice was significant in different maternal age, mode of delivery, gestational age, low Apgar score while it was not significant with BMI, parity.

Maternal and fetal outcome with respect to jaundice and no jaundice cases stratified by maternal age, gestational age and parity, maternal education, BMI, socioeconomic status, mode of delivery, gender of baby, baby birth and weight.

## DISCUSSION

Jaundice is not common in obstetric patients, occurring about once in 2000 pregnancies<sup>[6]</sup>, although there is a much higher frequency in countries where the general incidence of hepatitis is high. Jaundice in pregnancy carries a grave prognosis for both the fetus and the mother, and is responsible for 10% of maternal deaths.<sup>[7]</sup> Most of the diseases causing jaundice in nonpregnant patients can also coincidentally occur in pregnancy; however some diseases are specifically associated with pregnancy. Such diseases include; hyperemesis gravidarum; recurrent intrahepatic cholestasis of pregnancy; acute fatty liver of pregnancy; pre-eclampsia/eclampsia and HELLP (Haemolysis, elevated liver enzymes and low platelets) syndrome.<sup>[8,9]</sup> Liver dysfunction during pregnancy is multifactorial in origin and diagnosis is often challenging. The key to maternal and fetal wellbeing is an early diagnosis and appropriate management. To determine the frequency of jaundice in pregnancy and its maternal and fetal outcome, a total of 507 pregnant women, 18-45 years of age, were included in this study. The relationship of parity to the incidence is particularly remarkable in this study with 48.9% of cases occurring in primiparous women; such relationship is found in particular with acute fatty liver of pregnancy, in which women carrying their first babies are most affected.<sup>[10]</sup> Liver disorders affect at younger age group of patients, the peak age being 21-25 years (49.6%) in our study. The average age of the women was  $25.91 \pm 4.46$  years. Study done by Aparajita et al showed incidence of 52.9% in younger age group and 51% were Primigravida.<sup>[11]</sup> About 18.5% patients in our study belonged to lower socioeconomic class out of which 4.3 were diagnosed with Jaundice. Contrary to this Begum N et al studied about the seroprevalence (IgG Anti HEV) of subclinical HEV infection in pregnant women and reported that exposure to hepatitis E was more in lower socio economic class.<sup>[12]</sup>

The incidence of jaundice in this study was 8.28%. The incidence is higher compared to US statistics but similar to other regional studies. This is because of low socioeconomic status, poor sanitation and delayed referrals to tertiary centers. Studies conducted by Nagaria et al, Oladokun et al, Patel et al and Neema Acharya et al have reported an incidence of 0.5%, 0.3%, 0.4% and 0.4% respectively.<sup>[13, 14, 15, 16]</sup> No significant difference in parity was noted; hence both primigravida and multigravida are at risk and to be carefully attended for any symptoms or signs of liver disease during pregnancy. In this study, out of total 42 patients of Jaundice, 38 patients (11.9%) were in 3rd trimester. This may correlate with the growing demands of the fetus and the consequent burden on the maternal metabolism to meet the requirements as the pregnancy advances. Hence extra precaution to be taken as the fetus grows, jeopardizing the maternal status.

Fetal effects causing concern include higher incidence of intrauterine deaths and still births, meconium staining of amniotic fluid and fetal distress; intra uterine and perinatal transmission of viral hepatitis from the mother to the fetus resulting in chronic liver disease.<sup>[17, 18]</sup> Some of the complications in the mother like DIC, coagulation disorders, hepatic encephalopathy, APH and PPH could be responsible for adverse maternal outcomes and perinatal outcomes. Out of 42 patients, 23.8% had maternal mortality in our study. Hepatorenal failure, encephalopathy, DIC and postpartum hemorrhage were responsible for the deaths. Kumar et al. reported that the mortality rate among jaundiced pregnant women was 26.9%.<sup>[19]</sup> Begum et al. reported 22.2% fatality rate.<sup>[20]</sup> Patra et al. in New Delhi reported 15-20% maternal mortality rate in pregnant patients with jaundice.<sup>[21]</sup> The risk of fetal morbidity and mortality in jaundice during pregnancy is higher than in the general population<sup>[22, 23]</sup> In our study, still birth was 20% (20/40%) in which fresh still birth and macerated still birth was 15% and 5% which were not statistically significant while all were late neonatal death and which was significantly high in jaundice pregnant cases

## CONCLUSION

Jaundice in pregnancy is rare, but remains clinically important because of serious adverse effects on both the mother and the fetus. These disorders are complex and should be managed by experienced physicians in specialized centers. Maternal and fetal survival can be improved with better understanding of the pathogenesis of these disorders and higher standards of clinical care. Proper timing of delivery, antepartum fetal surveillance, good NICU care could be the modifiable determinants of a good fetal outcome in women with jaundice.

## REFERENCES

- Nath J, Bajpayi G, Sharma R. A clinical study on jaundice in pregnancy with special emphasis on fetomaternal outcome. *IOSR-JDMS*.2015;14(3):116-9.
- Patel JB, Thaker VR, Shah MJ, Mewada NB. Study of fetomaternal outcome in patients of jaundice in third trimester of pregnancy. *Inter J Reprod Contracept Obstet Gynecol*. 2015;4(6):1961-4.
- Krishnamoorthy J, Murugesan A. Jaundice during pregnancy: maternal and fetal outcome. *Inter J Reprod Contracept Obstet Gynecol*.2016;5(8):1-5.
- Sharma S, Aherwar R, Jawade S. Maternal and fetal outcome in jaundice complicating pregnancy: a prospective study. *Inter J Reprod Contracept Obstet Gynecol*.2016;5(4):1084-7.
- Singh K, Kumar G, Singh A, Rani A. Outcome and management of antenatal patients with jaundice in tertiary care centre of eastern India: a retrospective study. *Inter J Res Med Sci*. 2015;3(9):2402-4.
- Whitfield CR. Miscellaneous Disorders complicating Pregnancy. In: Whitfield CR, editor. *Dewhurst's textbook of obstetrics and gynaecology for postgraduates*. Oxford: Blackwell scientific publishers; 1995. P. 288-92.
- Tripti N, Agarwal S. Fetomaternal outcome in jaundice during pregnancy. *Obstet Gynecol India*. 2005;10:424-7.
- Williamson C, Nelson-Piercy C. Liver disease in Pregnancy. *Br J Hospital Med*. 1997;58:213-6.
- Borhanmanesh F, Haghghi P, Hekmat Ketal. Viral hepatitis during pregnancy: Severity and effect on gestation. *Gastroenterology*. 1973;64:304-12.
- Megafu U. Jaundice in pregnancy aetiology, management and mortality at Enugu, Nigeria. *East Afr Med J*. 1981;58:501-9.
- Dsouza AS, Gupta G, Katumalla FS, Goyal S. Maternal and fetal outcome in liver diseases of pregnancy-A tertiary hospital experience. *International Journal of Scientific and Research Publications*. 2015;5(9):45.
- Begum N, Devi SG, Husain SA, Kumar A, Kar P. Seroprevalence of subclinical HEV infection in pregnant women from north India: a hospital based study. *Indian J Med Res*. 2009;130:709-13.
- Shukla S. Prospective study on acute viral hepatitis in pregnancy; seroprevalence, and fetomaternal outcome of 100 cases. *J Biosci Tech*. 2011;2(3):279-86.
- Oladokun A, Otegbayo JA, Adeniyi AA. Maternal and fetal outcomes of jaundice in pregnancy at the University College Hospital, Ibadan. *Nigerian J Clin Practice*. 2009;12(3):25.

15. Patel B, Thaker R, Shah J, Mewada B. Study of fetomaternal outcome in patients of jaundice in third trimester of pregnancy. *Int J Reproduction Contracept Obstetrics Gynecol.* 2015;1961–4.
16. Acharya N, Acharya S, Shukla S, Athvale R. Study of Jaundice in Pregnancy. *Global J Med Res.* 2014 Feb 22;13(2):32.
17. Joshi D, James A, Quaglia A, Westbrook R, Heneghan M. Liver disease in pregnancy. *Lancet.* 2010;375(9714):594–605.
18. Lata I. Hepatobiliary diseases during pregnancy and their management: an update. *InterJCriticalIllness Injury Sci.* 2013 Jul;3(3):175.
19. Kumar A, Beniwal M, Kar P, Sharma JB, Murthy NS. Hepatitis E in pregnancy. *Int J GynecolOstet.* 2004;85:240-4.
20. Begum N, Polipalli SK, Hssain SA, Kumar A, Kar P. Duration of hepatitis viremia in pregnancy. *Int J Gynaecol Obstet.* 2010;108:207-10.
21. Patra S, MS; Kumar A, Trivedi SS, Puri M, Sarin SK. Maternal and fetal outcomes in pregnant women with acute hepatitis E virus infection. *Ann Intern Med.* 2007;147:28-33.
22. Rioseco AJ, Ivankovic MB, ManzurA,Hamed F, Kato SR. Intrahepatic cholestasis of pregnancy: a retrospective case-control study of perinatal outcome. *Am J Obstet Gynecol.* 1994;170:890–5.
23. Alsulyman OM, Ouzounian JG, Ames-Castro M, Goodwin TM. Intrahepatic cholestasis of pregnancy: perinatal outcome associated with expectant management. *Am J Obstet Gynecol.* 1996;175:957–60.