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Comparison of Fetomaternal Outcome of Pregnancies between Women with Advanced Maternal Age and Younger Women

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Abstract

Introduction: Advanced maternal age which is defined as the age of the mother as 35 years or more at the time of delivery has become increasingly common in the last two to three decades. This study aimed to evaluate obstetric and perinatal outcomes in women with advanced maternal age in comparison to that of younger women. ***Methods:*** This cross-sectional study was conducted at the Department of Obstetrics and Gynaecology in Rangpur Medical College Hospital, Rangpur, from November 2015 to April 2016. A total of 100 patients were selected as study subjects by simple random sampling. Patients aged younger than 35 years primi/ multigravida and advanced maternal age 35 years and older primi/ multigravida were considered as group I and group II respectively. Data cleaning, validation, and analysis were performed using the SPSS software version 16.0. Different statistical methods were adopted for this study. ***Result:*** Concerning the obstetric outcomes, malpresentation was found in 05(10.0%) and 12(24.0%) in group I and group II respectively. PROM was 2(4.0%) in group I but not found in group II. Gestational hypertension was 2(4.0%) in group I and 1(2.0%) in group II. Abruptio placentae were 1(2.0%) in group I and 1(2.0%) in group II. PPH was not found in both groups. Regarding fetal outcomes, NICU admission patients were found 2 (4.0%) in group I and 16 (32%) in group II respectively. Meconium aspiration was 6(12.0%) and 7(14.0%) in group I and group II respectively. The congenital anomaly was 1(2.0%) in group I and 2(4.0%) in group II. The perinatal loss was 1(2.0%) and 2(2.0%) in group I and group II respectively. APGAR score at 1 minute <7 was found 2(4.0%) in group I and 19(38.0%) in group II respectively. ***Conclusion:*** Advancing maternal age appears to be associated with pre-eclampsia, cesarean section, gestational diabetes in primigravida and preterm labor, low birth weight, and placenta previa more common in multigravida women in this age group. NICU admission, malpresentation, APGAR score <7 compared to young age.

Keywords: Fetomaternal Outcome, Maternal age, APGAR score, Gestational hypertension, Preterm labor.

INTRODUCTION

Advanced maternal age which is defined as the age of a mother as 35 years or more at the time of delivery has become increasingly common in the last two to three decades. In the developed world, the changing pattern of becoming pregnant at an advanced age can be attributed to various reasons. The reason could be changes in the structure of families with more late marriages or remarriages, women's pursuit of higher education, career advancement, advances in assisted reproductive technique, and availability of effective and safe contraceptives [1, 2]. But in developing countries like ours, the scenario is different. Women may opt for pregnancy at an older age due to cultural preferences for larger family sizes, sometimes driven by a desire for a male child, and limited awareness about effective contraception options. Advanced maternal age beyond 35 years is considered to have more adverse pregnancy outcomes as compared to those in younger women [3]. So for the management of pregnant women with age > 35 years, it requires an understanding of the effect of age and pre-existing co-morbidities that may lead to complications during pregnancy, and delivery and thus prevent a healthy outcome [4]. Any pregnancy at or more than 35 years of age is always at increased risk for antenatal complications like preeclampsia, antepartum hemorrhage, gestational diabetes, preterm birth, intrauterine growth restriction. Perinatal morbidity like low birth weight and birth asphyxia as well as perinatal

mortality is increased in these women as compared to their younger counterparts [5]. Advanced maternal age has been regarded as a risk factor for complications in pregnancy. The association between advanced maternal age and increased risk of chromosomal abnormalities and spontaneous abortion has been well documented in studies [6, 7]. In comparison with younger women, 35-year-old women experience more spontaneous and induced abortions, a greater risk of perinatal death, low newborn vitality, low birth weight, preterm delivery, and newborns small for their gestational age [8]. It is worth mentioning that more frequent alterations of newborn weight in these women involve cases of both macrosomia and low weight for gestational age [9]. Advanced-age pregnancies have traditionally been considered high-risk pregnancies mainly due to the growing incidence of hypertensive syndrome, greater weight gain, obesity, fibroids, diabetes, abortions, and cesarean section [10]. Thus, this study aimed to evaluate fetomaternal outcomes in women with advanced maternal age in comparison to that of younger women. Advanced maternal age can heighten the likelihood of experiencing complications like gestational diabetes, preeclampsia, placental abruption, and placenta previa during pregnancy. However, it's essential to note that age isn't the sole predictor of risk. Various lifestyle elements, such as family medical history, socio-economic status, and demographic factors, significantly influence both maternal and infant well-being [11].

OBJECTIVE

General Objective

- To evaluate fetomaternal outcomes in women with advanced maternal age in comparison to that of younger women.

Specific Objectives

- To see the age distribution of the respondents.
- To know the gravidity of the participants.
- To assess the mode of delivery of the patients.
- To evaluate the pregnancy outcomes in primigravida women.
- To evaluate the pregnancy outcomes in multigravida women.

METHODS

This cross-sectional study was conducted at the Department of Obstetrics and Gynaecology in Rangpur Medical College Hospital, Rangpur, from November 2015 to April 2016. All pregnant women admitted to the in-patient department of Obstetrics and Gynaecology in Rangpur Medical College Hospital were considered as the study population. A total of 100 patients were selected as study subjects as per inclusion and exclusion criteria. A simple random sampling technique was adopted in this study.

Inclusion Criteria

- All pregnant women > 20 years of age.
- Patients who were willing to give consent.

Exclusion Criteria

- Patients under 20 years of age.
- Patients who suffer from heart, kidney, or liver disease.
- Patients who did not give consent to participate in the study.

Data were collected through face-to-face interviews with the mother using a pre-designed questionnaire, along with maternal and fetal outcome and their complications. Patients aged younger than 35 years primi/ multigravida and advanced maternal age 35 years and older primi/ multigravida were considered as group I and group II respectively. Data cleaning, validation, and analysis were performed using the SPSS software version 16.0. Categorical data was expressed as mean ± SD (standard deviation). An independent sample studentst–test was used for the comparison of mens of continuous variables with normal or approximately normal distributions. The Chi-square test was used to analyze discrete variables for the assessment of the association between maternal age and pregestational chronic maternal disease. Multiple logistic regression (backward stepwise model) was performed to determine the independent effect of advanced maternal age on outcome differences being significant in the univariate analysis. Pregestational maternal heart disease and postpartum hemorrhage were used as covariate factors among multipara, abnormal CTG was used as covariate factors among primipara in the model, respectively. The statistical significance threshold was set to $p \leq 0.05$ (two-tailed). Odds ratios (ORs) with 95 confidence intervals (95% CI) were calculated. After analysis, the data were presented in tables. Ethical clearance was taken from the ethical committee of Rangpur Medical College. Informed written consent was taken from the participants.

RESULTS

Table 1: Age distribution of the study patients (N=100)

Age (years)	Group I (n=50)		Group II (n=50)		p-value
	n	%	n	%	
25-29	28	56.0	0	0.0	0.001[s]
30-34	22	44.0	0	0.0	
35-39	0	0.0	47	94.0	
40-44	0	0.0	3	6.0	

Mean ± SD	26.0 ± 6.5	38.5 ± 3.5	
Range (min-max)	25-34	35-43	

Group I: Non-advanced maternal age younger than 35 years primi / multigravida
Group II: Advanced maternal age 35 years and older primi / multigravida.
s = significant
P value reached from unpaired t-test

A total of 100 patients were included in this study, it was observed that they were divided into four groups according to their age. The mean age was found 26.0 ± 6.5 years and 38.5 ± 3.5 years in group I and group II respectively. The mean age difference was statistically significant (*P* <0.05) between the two groups in the unpaired t-test (Table 1).

Table 2: Distribution of the study patients according to gravida (N=100)

Gravidity	**Group I (n=50)**		**Group II (n=50)**		p-value
	n	**%**	**n**	**%**	
Primigravida	36	72.0	19	38.0	0.002[s]
Multigravida	14	28.0	31	62.0	

s = significant
P value reached from unpaired t-test

Primigravida was found 36(72.0%) in group I and 19(38.0%) in group II. Multigravida was found in 14(28.0%) and 31(62.0%) in group I and group II respectively. The difference was statistically significant (*P* <0.05) between the two groups in the chi-square test (Table 2).

Table 3: Pregnancy outcomes in primigravida women above and under the age of 35 (n= 55)

Outcomes	**Group I (n=36)**		**Group II (n=19)**		**p-value**
	n	**%**	**n**	**%**	
Preeclampsia	3	8.3	4	21.1	0.041[s]
Cesarean	19	52.7	16	84.2	0.868[ns]
Preterm labour	5	13.9	2	10.5	0.087[ns]
Low birth weight	4	11.1	1	5.3	0.347[ns]
Gestational diabetes	1	2.8	1	5.3	0.347[ns]
Placenta previa	0	0.0	0	0.0	-

s=significant, ns=not significant
P value reached from the chi-square test.

Preeclampsia was 03(8.3%) and 4(21.1%) in group I and group II respectively. Maximum patients were found a cesarean section in both groups, which was 19 (52.7%) in group I and 16(84.2%) in group II, followed by preterm labor 5(13.9%) and 2(10.5%) in group I and group II respectively. Low birth weight of 4(11.1) in group I and 1(5.3%) in group II respectively. Preeclampsia difference was found statistically significant (p<0.05) and other parameters were not found statistically significant (p>0.05) between the two groups in the chi-square test (Table 3).

Table 4: Pregnancy outcomes in multigravida women above and under the age of 35 (n = 45)

Outcomes	**Group I (n=14)**		**Group II (n=31)**		**p-value**
	n	**%**	**n**	**%**	
Preeclampsia	1	7.1	16	51.6	0.474[ns]
Cesarean	1	7.1	3	9.7	0.731[ns]
Preterm labour	1	7.1	2	6.5	1.092[ns]
Low birth weight	1	7.1	6	19.3	0.367[ns]
Gestational diabetes	0	0.0	3	9.7	0.455[ns]
Placenta previa	0	0.0	2	6.5	0.455[ns]

ns = not significant
P value reached from the chi-square test.

Cesarean section was found 01(7.1%) and 16(51.6%) in group I and group II respectively. Preterm labor was 1(7.1%) and 2(6.5%) in group I and group II respectively. Low birth weight 1(7.1%) in group I and 2(6.5%) in group II respectively. Preeclampsia was found 1(7.1%) in group I and 16(51.6%) in group II. The difference was not found statistically significant (p>0.05) between the two groups in the chi-square test (Table 4).

Table 5: Mode of delivery of the study patients (N= 100)

Mode of delivery	Group I (n=50)		Group II (n=50)		p-value
	n	%	n	%	
Vaginal delivery	28	56.0	14	28.0	0.580^{ns}
Forceps or vacuum	2	4.0	4	8.0	0.297^{ns}
Cesarean section	20	40.0	32	64.0	0.690^{ns}

ns = not significant
P value reached from the chi-square test

Vaginal delivery patients were found 28(56.0%) in group I and 14(28.0%) in group II. Forceps or vacuum patients were found 02(04.0%) and 04(08.0%) in group I and group II respectively. Cesarean section was found 20(40.0%) in group I and 32(64.0%) in group II. The difference was not statistically significant (*P* >0.05) between the two groups in the chi square test (Table 5).

Table 6: Distribution of patients obstetric complications by maternal age (N = 100)

Complications	Group I (n=50)		Group II (n=50)		p-value
	n	%	n	%	
Malpresentation	5	10.0	12	24.0	0.062^{ns}
PROM	2	4.0	0	0.0	0.153^{ns}
Gestational hypertension	2	4.0	1	2.0	0.557^{ns}
Abruptio placentae	1	2.0	1	2.0	0.752^{ns}
PPH	0	0.0	0	0.0	-

ns=not significant
P value reached from the chi-square test.

Malpresentation was found in 05(10.0%) and 12(24.0%) in group I and group II respectively. PROM was 2(4.0%) in group I but not found in group II. Gestational hypertension was 2(4.0%) in group I and 1(2.0%) in group II. Abruptio placentae were 1(2.0%) in group I and 1(2.0%) in group II. PPH was not found in both groups. The difference was not found statistically significant (p>0.05) between the two groups in the chi-square test (Table 6).

Table 7: Distribution of fetal complications by maternal age (N=100)

Complications	Group I (n=50)		Group II (n=50)		p-value
	n	%	n	%	
NICU admission	2	4.0	16	32.0	0.001^{s}
Meconium aspiration	6	12.0	7	14.0	0.766^{ns}
Congenital anomaly	1	2.0	2	4.0	0.557^{ns}
Perinatal loss	1	2.0	1	2.0	0.752^{ns}
APGAR score (at 1 minute)					
<7	2	4.0	19	38.0	0.001^{s}
≥ 7	48	96.0	21	62.0	

s = significant; ns = not significant
P value reached from the chi-square test

NICU admission patients were found 2 (4.0%) in group I and 16 (32%) in group II respectively. Meconium aspiration was 6(12.0%) and 7(14.0%) in group I and group II respectively. A congenital anomaly was 1(2.0%) in group I and 2(4.0%) in group II. The perinatal loss was 1(2.0%) and 2(2.0%) in group I and group II respectively. APGAR score at 1 minute <7 was found 2(4.0%) in group I and 19(38.0%) in group II respectively. NICU admission and APGAR score differences were statistically significant (*P* <0.05) between the two groups (Table 7).

DISCUSSION

The age range found in this current study that 25 to 34 years and 35 to 44 years in Group I and Group II respectively. Similarly, a study compared younger age (24 to 35 years) and above age groups (more than 35 years) has a twofold risk of delivery-related perinatal death at term [12] Almost similar, age range was observed by other investigators [13, 14]. In this present study, primigravida was more common in group I patients, which was 72% and 38% in group I and group II respectively. Primigravida was significantly (P<0.05) higher in group I [15-17] In this current series most of the patients had normal body weight in both groups, which was 84% in group I and 62% in group II. The mean body mass index was found 26.7 ± 6.9 kg/m^2 and 28.4 ± 6.7 kg/m^2 in group I and group II respectively. The mean BMI was almost similar between the two groups [18] Normal vaginal delivery was observed in this series, 56% in group I and 28% in group II. Forceps or vacuum were 4% and 8% in group I and group II respectively. Cesarean section was done in 40% in group I and 64% in group II. Vaginal delivery was higher in group I but the difference was not significant (P>0.05) between the two groups. Similar findings have been observed in another study [19]. In this series women with primigravida and multigravida preeclampsia were found at 8.3% in group I and 21.1% in group II, which was higher in group II but not significant. A similar study showed that persons over 35 years pose a higher risk of preeclampsia in primigravida women almost fivefold [20]. In this present study, gestational diabetes was found 2.8% and 5.3% in group I and group II (advanced age group) respectively in primigravida women which was higher in the advanced age group (group II) but not significant, which was similar to another study [20]. In this current series, placenta previa was not found in group I but 6.5% was found in group II in multigravida women. Another study showed that the increase in the rate of placenta previa an increase [20]. In this series preterm labor was higher in the advanced age group but not significant (P>0.05), which was 7.1% in group I and 9.7% in group II in multigravida women. Several studies indicate that there is a meaningful relation between the increasing mother's age and preterm labor [15-17, 21]. In this study malpresentation was found in 10% of group I and 24% in group II respectively, which was higher in group II but not significant (P>0.05). A study reported the malpresentation in aged and young primigravida women as 11.0% and 6.0%, respectively, and concluded that it was significant [22]. In this current study, low birth weight was found at 7.1% and 6.5% in group I and group II respectively which was higher in group II in multigravida but not significant. A similar result was reported for the primigravida women of over 40 years and the women with cesarean [23] In this study NICU admission, meconium aspiration, and malpresentation were the more common obstetric complications in both groups and NICU admission was significantly (p<0.05) higher in group II but others were not significant (p>0.05). Where NICU admission patients were found at 4% and 32% in group I and group II respectively. Malpresentation was found at 10% and 24% in group I and group II respectively. Meconium aspiration was found in 12% in group I and 14% in group II. No maternal mortality was recorded during the study period. The findings of the above study are comparable with the present study [24].

Limitations of The Study

The study was carried out in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

In the context of changing maternal demographics, this study was undertaken to compare the effect of advanced maternal age on fetomaternal outcomes. Advancing maternal age appears to be associated with pre-eclampsia, cesarean section, gestational diabetes in primigravida and preterm labor, low birth weight, and placenta previa more common in multigravida women in this age group. NICU admission, malpresentation, APGAR score <7 compared to young age.

RECOMMENDATION

All women of 35 years or older should be disallowed to carry a pregnancy beyond 37 completed gestational weeks. It is recommended that all women take a daily folic acid supplement, especially in the preconception period and the first trimester of pregnancy. Sonography is to be done to exclude fetal genetic or structural anomalies. Women over age 35 years are considered "high risk", they require meticulous antenatal supervision and should have a mandatory hospital delivery. It is recommended that all women especially those over age 35 years, ensure preconceptional counseling.

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Conflict of Interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Bianco, A., Stone, J., Lynch, L., Lapinski, R., Berkowitz, G., & Berkowitz, R. L. (1996). Pregnancy outcome at age 40 and older. *Obstetrics & Gynecology*, *87*(6), 917-922.
2. Berkowitz, G. S., Skovron, M. L., Lapinski, R. H., & Berkowitz, R. L. (1990). Delayed childbearing and the outcome of pregnancy. *New England Journal of Medicine*, *322*(10), 659-664.
3. Chloe, V., & Fretts, R. (2006). Pregnancy and advanced maternal age. *Progress in obstetrics and gynaecology. 17th ed. Philadelphia: Elsevier Publishers*, 113-124.

4. Naheed, F., Tufail, A., Kammeruddin, K., & Madiha, S. (2009). Obstetrical risks with increased maternal age greater than 35 years. *Pak J Surg*, *25*, 240-243.
5. Wang, Y., Tanbo, T., Åbyholm, T., & Henriksen, T. (2011). The impact of advanced maternal age and parity on obstetric and perinatal outcomes in singleton gestations. *Archives of gynecology and obstetrics*, *284*, 31-37.
6. Bayrampour, H., Heaman, M., Duncan, K. A., & Tough, S. (2012). Advanced maternal age and risk perception: a qualitative study. *BMC pregnancy and childbirth*, *12*, 1-13.
7. Ziadeh, S., & Yahaya, A. (2001). Pregnancy outcome at age 40 and older. *Archives of gynecology and obstetrics*, *265*(1), 30-33.
8. Delpisheh, A., Brabin, L., Attia, E., & Brabin, B. J. (2008). Pregnancy late in life: a hospital-based study of birth outcomes. *Journal of women's health*, *17*(6), 965-970.
9. Azevedo, G. D. D., Júnior, R. A. D. O. F., Freitas, A. K. M. S. D. O., Araújo, A. C. P. F. D., Soares, E. M. M., & Maranhão, T. M. D. O. (2002). Effect of maternal age on perinatal outcomes. *Rev Bras Ginecol Obstet*, *24*(3), 181-185.
10. Cleary-Goldman, J., Malone, F. D., Vidaver, J., Ball, R. H., Nyberg, D. A., Comstock, C. H., ... & Faster Consortium. (2005). Impact of maternal age on obstetric outcome. *Obstetrics & Gynecology*, *105*(5 Part 1), 983-990.
11. Zahan, U. M., Suchi, F. A., Shampi, S. B., & Husan, G. W. M. Z. (2013). Feto-maternal out-come of advanced maternal age-a clinical study in BSMMU. *IOSR J Dent Med Sci. (IOSR-JDMS)*, *9*(5), 76-80.
12. Pasupathy, D., Wood, A. M., Pell, J. P., Fleming, M., & Smith, G. C. S. (2009). J Epidemiol Community Health, 12, 2-5.
13. Hoffman, M. C., Jeffers, S., Carter, J., Duthely, L., Cotter, A., & González-Quintero, V. H. (2007). Pregnancy at or beyond age 40 years is associated with an increased risk of fetal death and other adverse outcomes. *American journal of obstetrics and gynecology*, *196*(5), e11-e13.
14. Russell, R. B., Petrini, J. R., Damus, K., Mattison, D. R., & Schwarz, R. H. (2003). The changing epidemiology of multiple births in the United States. *Obstetrics & Gynecology*, *101*(1), 129-135.
15. Diejomaoh, M. F., Al-Shamali, I. A., Al-Kandari, F., Al-Qenae, M., & Mohd, A. T. (2006). The reproductive performance of women at 40 years and over. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *126*(1), 33-38.
16. Miller, D. A. (2005). Is advanced maternal age an independent risk factor for uteroplacental insufficiency?. *American journal of obstetrics and gynecology*, *192*(6), 1974-1980.
17. Joseph, K. S., Allen, A. C., Dodds, L., Turner, L. A., Scott, H., & Liston, R. (2005). The perinatal effects of delayed childbearing. *Obstetrics & Gynecology*, *105*(6), 1410-1418.
18. Andersen, A. M. N., Wohlfahrt, J., Christens, P., Olsen, J., & Melbye, M. (2000). Maternal age and fetal loss: population based register linkage study. *Bmj*, *320*(7251), 1708-1712.
19. Delbaere, I., Verstraelen, H., Goetgeluk, S., Martens, G., De Backer, G., & Temmerman, M. (2007). Pregnancy outcome in primiparae of advanced maternal age. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *135*(1), 41-46.
20. Aghamohammadi, A., & Nooritajer, M. (2011). Maternal age as a risk factor for pregnancy outcomes: maternal, fetal and neonatal complication. *Afr J Pharm Pharmacol*, *5*(2), 264-269.
21. Temmerman, M., Verstraelen, H., Martens, G., & Bekaert, A. (2004). Delayed childbearing and maternal mortality. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *114*(1), 19-22.
22. Gilbert, W. M., Nesbitt, T. S., & Danielsen, B. (1999). Childbearing beyond age 40: pregnancy outcome in 24,032 cases. *Obstetrics & Gynecology*, *93*(1), 9-14.
23. Ziadeh, S., & Yahaya, A. (2001). Pregnancy outcome at age 40 and older. *Archives of gynecology and obstetrics*, *265*, 30-33.
24. Ezra, Y., McParland, P., & Farine, D. (1995). High delivery intervention rates in nulliparous women over age 35. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *62*(2), 203-207.