ORIGINAL ARTICLE

Risks of Selected Fetal Adverse Pregnancy Outcomes at Advance Maternal Age

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ABSTRACT

Background and Aim: Advanced maternal age pregnancy could be referred to as pregnancy after 35 years or older. The prevalence of postponing pregnancies is increasing day by day worldwide. However, limited evidence was found on advanced maternal age pregnancy association with fetal adverse outcomes. The present study aimed to evaluate the frequency of advanced maternal age selected fetal adverse pregnancy outcomes.

Place and Duration: Obstetrics & Gynaecology department of Alkhidmat Hospital Kohat and Qazi Hussain Ahmad Medical Complex, Nowshera for duration of six months from November 2020 to April 2021.

Materials and Methods: This single-centered retrospective study was conducted on 220 postpartum women in the study group (≥35 years) and 170 control group postpartum women (20-34 years) who delivered at Obstetrics & Gynaecology department of Alkhidmat Hospital Kohat and Qazi Hussain Ahmad Medical Complex, Nowshera after 28 gestational weeks. Individuals who met the inclusion criteria were enrolled and sampled based on randomized control sampling technique for both control and study groups. Data extraction checklist and pretested questionnaire were used for data collection from the maternal charts. Adverse pregnancy outcome and advanced maternal age was correlated adjusted relative risks and strength with a 95% confidence interval. SPSS version 20 was used for data analysis and considered p-value >0.05 as a statistical standard.

Results: The adverse neonatal outcomes include low birth weight, preterm birth, and stillbirth with a prevalence 38 (17.4%), 46 (20.8%), and 31 (14.2%) respectively in the study group. In the control group, the incidence of low birth weight, preterm birth, and stillbirth was 21 (12.6%), 15 (14.6%) and 6 (3.5%) respectively. The stillbirth (ARR=3.16 95% CI (1.29–6.03) and preterm deliveries (ARR=2.71 95% CI (1.79–3.86) risk had significantly higher prevalence compared to control group advanced age pregnancy. Insignificance association was found between low birth weight and advanced maternal age.

Conclusion: Stillbirth and preterm birth was the adverse fetal outcome significantly related with advanced maternal age pregnancy. There was no significant association between low birth weight and advanced maternal age.

Keywords: Maternal age, Fetal Adverse Pregnancy Outcomes

INTRODUCTION

Pregnancy is being postponed by a growing figure of women worldwide especially in developing countries [1]. The previous studies conducted had focused on the association between increased chromosomal and miscarriage risk and advanced maternal age, but few studies associated the stillbirth, preterm birth, and congenital malformation with conflicting results [2, 3]. Childbearing maternal age has vividly shifted due to cultural and social range got broader in the last few decades. Childbearing delay is on increasing trend throughout the world [4] and the young age pregnancies are declining with rare cases in developing countries [5]. Both late age and young-age pregnancies are at higher risk for adverse pregnancy outcomes. A young age childbearing mothers had low birth weight, postnatal mortality, low Apgar score, and preterm birth risks with higher prevalence [6, 7]. Similarly, pregnancy delays in pregnant women had higher complications and risks for maternity [8].

Different neonatal adverse outcomes are mainly associated with advanced maternal age pregnancy; however, these adverse outcomes give contradictory results. Neonatal and intrauterine fetal death (IUFD) are adverse maternal age pregnancies complications [9]. AMA-associated perinatal outcomes are low birth weight, Apgar score <7, early neonatal death, neonatal intensive care unit (NICU), and preterm birth [10]. The adverse outcome in AMA pregnancy is caused by insufficient cardiovascular adaptation impedes hemodynamic changes during pregnancy to support the fetus [11]. This could enlighten why AMA pregnancy is interrelated to placental abruption and intrauterine restriction of growth [12]. Pregnancy-related complications affect the newborn's future in terms of glucose metabolism in AMA [13]. The childbearing standard age is between 20 years and 35 years. But later-age pregnancy is an evolving health dispute among populations. Women needs to be supported with choices of their life and encounter problems in their later age pregnancy. Different studies reported different but contradictory results on pregnancy outcomes of advanced maternal age [14, 15]. The aim of the present study was to assess the prevalence and outcome of advanced maternal age pregnancies.

METHODS

This single-centered retrospective study was carried out on 220 postpartum women in the study group (≥35 years) and 170 control group postpartum women (20-34 years) who delivered at Obstetrics & Gynaecology department of Alkhidmat Hospital Kohat and Qazi Hussain Ahmad Medical Complex, Nowshera after 28 gestational weeks. The study was conducted over the period of six months from November 2020 to April 2021. Individuals who met the inclusion criteria were enrolled and sampled based on randomized control sampling technique for both control and study groups. Data extraction checklist and pretested questionnaire were used for data collection from the maternal charts. Adverse pregnancy outcome and advanced maternal age was correlated adjusted relative risks and strength with a 95% confidence interval. The study inhabitants was distributed into two groups; control group and study group. Women with age above 35 years were involved in the study group while 20-34 years women were in the control group. The gestational age was more than 28 weeks in both the control and study group. An individual with 20 or more years of age and gave multiple births were excluded along with women with medical complications such as thyrotoxicosis, CHF, chronic hypertension, and diabetes mellitus. The sample size was calculated with few assumptions such as confidence interval 95%, statistical power 80%, and the non-respondents rate was 9%. The sample size was 220 and 170 women in the study and control group respectively. In the study group, all the individual who met the inclusive criteria was enrolled.

Stillbirth, preterm birth, fetal outcomes, and low birth weight were dependent variables while maternal age was the exposure variable. Parity, educational status, gravidity, marital status, previous adverse outcomes, infant gender, alive children, and health insurance were the other predictors. Pregnancy above 35 years was defined as pregnancy at advanced maternal age. A pre-designed questionnaire was used for data collection. Mother's chart was used for extracting neonatal outcomes and socio-economic, demographic, and maternal age was used as exposure variables and collected from maternity. Routinely based discharge and postpartum period were used for data collection.

RESULTS

Of the total 390, the study group consisted 220 (56.4%) women while the control group had 170 (43.6%). The study group response rate was 97.3% where six women refused to take part and in the control group was 97.6% where four women declined the participation. The stillbirth (ARR=3.16 95% CI (1.29–6.03) and preterm deliveries (ARR=2.71 95% CI (1.79–3.86) risk had significantly higher prevalence compared to control group advanced age pregnancy. Insignificance association was found between low birth weight and advanced maternal age. The first child pregnant women were more than a half of their population in the control group and was 91.3% in study group. A multiparous grand was 35.4% in the study group. The ANC follow-up in both study and control group was 92.3% and 96.5% respectively. The baseline characteristics distribution over maternal age is shown in Table 1. The adverse neonatal

outcomes include low birth weight, preterm birth, and stillbirth with a prevalence 38 (17.4%), 46 (20.8%), and 31 (14.2%) respectively in the study group. In the control group, the incidence of low birth weight, preterm birth, and stillbirth was 21 (12.6%), 15 (14.6%) and 6 (3.5%) respectively as shown in Table 2/3.

Table-1. Baseline Characteristics distribution

Characteristics	Study group (N=220) n, (%)	Control group (N=170) n, (%)
Gravidity		
Primigravida	201 (91.4)	89 (52.6)
Multigravida	19 (8.6)	81 (47.4)
Parity		
Primiparous	19 (8.6)	96 (56.5)
Grand Multiparous	76 (34.5)	4 (2.3)
ANC Follow-up		
Yes	203 (92.3)	164 (96.5)
No	17 (7.7)	6 (3.5)
Previous Complex Outcomes		
Yes	109 (49.5)	32 (18.8)
No	111 (50.5)	138 (81.2)

Table 2. Prevalence of neonatal adverse outcomes in study group (220)

Adverse outcomes	Yes n (%)	No n (%)
Stillbirth	31 (14.1)	29 (13.2)
Preterm Births	46 (20.8)	41 (18.6)
Low weight births	38 (17.4)	35 (15.9)
Total	115 (52.3)	105 (47.7)

Table-3. Prevalence of neonatal adverse outcomes in control group (170)

Adverse outcomes	Yes n (%)	No n (%)
Stillbirth	6 (3.5%)	33 (19.4)
Preterm Births	15 (14.6%)	43 (25.3)
Low weight births	21 (12.6%)	52 (30.6)
Total	42 (24.7)	128 (75.3)

Adverse neonatal pregnancy outcomes and factors were associated with maternal age using a binary logistic regression model. Multivariate analysis with a p-value ≤of 0.2 was considered along with maternal age for analysis. Other parameters include gravidity, parity, educational status, ANC follow-up, and stay of the place were associated with stillbirth. Bi-variable analysis was used for the association between stillbirth and maternal age. Socioeconomic and obstetrics parameters such as gravidity, parent's education, alive children, ANC follow-up, parity, and adverse pregnancy outcomes were associated with preterm birth in AMA pregnancy in multivariable analysis as shown in Table 4.

Table-4 Fetal adverse outcomes with maternal age and other variables in Bivariate and multivariable analysis.

Maternal Age	Stillbirth		
	Yes	No	Adjusted RR (95% CI)
Control group	6 (3.5%)	164 (96.5)	1
Study control	31 (14.1%)	189 (85.9%)	(3.16, 95% CI (1.29–6.03)
	Low birth weight		
Control group	21 (12.6%)	159 (87.4%)	1
Study control	38 (17.4%)	182 (82.7%)	(1.32, 95% CI (0.97–1.82)
	Preterm Birth		
Control group	15 (14.6%)	155 (85.4%)	1
Study control	46 (20.8%)	174 (79.2%)	2.71 95% CI (1.79–3.86)

DISCUSSION

The current study focused on the fetal adverse outcomes correlated with AMA. Consequently, a higher prevalence of

low birth weight and stillbirth was found in advanced age pregnancy compared to young age pregnancy. In advanced maternal age pregnancy, an insignificant association was found with low birth weight. The prevalence of stillbirth was compared in both the study and control groups. The study group stillbirth prevalence was higher (14.2%) compared to the control study 3.5%. Another study found similar results with stillbirth incidence of 20.7% and 5% in both study and control groups [16]. Study setting and design imply different prevalence due to fetal and maternal age differences. The study group prevalence of preterm birth was reported higher 20.8% while it was 14.6% in the control group. Another prospective study found the prevalence of preterm birth of 78% which was higher than our findings of 20% in the study group [17].

The prevalence of low birth weight was found 16% in the study group which was lower than our study findings of 17.4% [18]. Another study found a much higher prevalence of 45% in study group of low birth weight [19]. In our study, it was found that advanced maternal age women had three times higher risks of stillbirth which matched another study conducted on AMA pregnancy outcomes [20]. Increased incidence of stillbirth might be caused by mother placental profusion reduced with age [21]. However, different studies attained changed deductions about the correlation between stillbirth and AMA. Among the studies that contradict the current study which concluded that there is no stillbirth risk increased in the AMA group compared to the control group [22]. In above 40 years aged pregnant women, insignificant association was found between adverse pregnancy outcomes risks and AMA [23].

Preterm deliveries in our study have a higher prevalence in advanced maternal age compared to younger age females. Another study's findings resembled our study regarding higher risk of AMA almost 3 times compared to younger age women [24]. Multiple adverse pregnancy outcomes were addressed through the study design. Due to the severity and risk variance, five outcomes had equal importance in adverse pregnancy outcomes total risk. The adverse pregnancy outcomes prevalence differences could be validated with extended population and comparable parameters such as demographic characteristics, environmental exposure, and antenatal care services. This is a baseline study and further studies ought to be conducted. Therefore, longitudinal cohort studies on adverse fetal outcomes would support the supplementary intuitions of pregnancy at complicated pregnancy-related outcomes and maternal age.

CONCLUSION

Stillbirth and preterm birth was the adverse fetal outcome significantly associated with advanced maternal age pregnancy. There was no significant association between low birth weight and advanced maternal age.

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