Maternal Multiparity and Adverse Neonatal Outcomes in Mosul City: A Prospective Observational Study

Duaa Iemad Idrees

Ministry of Health/Environment, Directorate of Health of Nineveh, Mosul, Iraq,
duaa.20nup48@student.uomosul.edu.iq

Salwa Hazim Almuktar

Professor, College of Nursing, University of Mosul-Iraq, dr.salwa@uomosul.edu.iq

Abstract

Background & Objective: Maternal multiparity is characterized by a woman having two or more pregnancies, irrespective of the outcome (live births, stillbirths, or miscarriages). Adverse neonatal outcomes encompass various detrimental health conditions that can impact newborns. The study aimed to assess the incidence and severity of maternal and neonatal adverse birth outcomes

Methods: quantitative cross-sectional observational study design due to its ability to gain a clear understanding of the research objectives over a period of 10 months, this study was conducted at three maternity and obstetric hospitals in AL-Mosul, Iraq The sample of the study consisted of 300 pregnant women between the ages of 15 and 45 years, who underwent delivery or were referred from antenatal care units for labor induction

Result: Mean age for grand multiparity is 30.49 and for multiparity is27.88.42.4% had babies weighing 2.5KG belongs to grand multiparity women

Conclusion: Most of the study participants Most common neonatal out comes was statistically significant difference in term low birth weight in both group the majority was in grandmothers

Keywords: *Multiparity, Neonatal Outcomes, Grand multiparity.*

INTRODUCTION

Multiparity is defined as having two or more pregnancies resulting in a live birth. Women who have had multiple pregnancies are at increased risk for certain complications, including preterm delivery, gestational diabetes, preeclampsia, and cesarean delivery. Additionally, multiparous women may be at increased risk for postpartum depression, postpartum hemorrhage, and other maternal health issues1.

The World Health Organization (WHO) defines low parity (LP) is less than five pregnancies with gestation periods of less than 20 weeks and high parity (HP) is defined as five or more pregnancies with gestation periods of less than 20 weeks2. The effects of multiparity on neonatal outcomes are less clear. Some studies have suggested that multiparous women are at increased risk for having a low birth weight baby or a baby with a congenital anomaly. Other studies have found no association between multiparity and neonatal outcomes3.

For gynecologists all around the world, multiparty is a long-standing issue since, in

areas where multiparity is exhibited, researchers are frequently unable to thoroughly explore it due to socioeconomic factors. Gynecologists in many countries, especially those with a trend toward hyper populations, as well as physicians in affluent countries who aim to evaluate and avoid all causes of prenatal morbidity and mortality, have been focusing on multiparity as a medical and social problem.4 Multiparous women will make up a larger percentage of a population with a high fertility rate, and the opposite is also true. Since a woman's multiparity status can be influenced by factors including access to family planning, cultural views on childbearing, and economic circumstances, it is important to note that a woman's multiparity status does not always represent the fertility rate of the population in which she resides5.

METHODS

Aim of the Study: The purpose of this study is to find out the relationship between multiparity and adverse neonatal outcomes

Design of the study: quantitative cross-sectional observational study design, comparative study design.

Setting and Time: The data were collected from the three obstetrics and gynecology units of teaching hospitals in mousl city, the center of Nineveh Governorate (alkhansaa teaching hospital, alsalam teaching hospital, albatool teaching hospital). The data collection was done in the period between the 20th of November 2022 to the 25th of march 2023.

Sample of the Study:

The sample of the study consisted of 300 pregnant women between the ages of 15 and 45 years, who underwent delivery or were referred from antenatal care units for labor induction. The data collection period was from 10 November 2022 to 30 May 2023. All multiparity pregnant women between the ages of 15 and 45. Pregnant women under the age of 15 and above the age of 50 were excluded from the study group.

Data collection and Instrumentation: The data collection tool used in this study was a structured questionnaire form. The questionnaire was designed in Arabic and then translated into English. It consisted of four parts.

Part 1: sociodemographic characteristic includes (age, BMI, Residence, level of education, occupation, economic status).

Part2: Focus on Neonatal Outcomes

weight, breastfeeding within 1 hour, prematurity, respiratory distress, meconium aspiration, congenital anomalies, Apgar score, and gestational age were considered important for assessing neonatal outcomes

Statistical Analysis: The data were analyzed using SPSS version 26 to interpret the study's findings.

RESULT

The study included 300 pregnant women. Demographic Characteristics for Multiparity and Grand multiparity (Table 1).

Table 1: Demographic Characteristics for Multiparity and Grand multiparity

Demographic Characteristics		Multiparity		Grand multiparity	
		Frequency	Percent %	Frequency	Percent %
Mother age	15 to 21	25	17.6	19	12.0
	22 to 28	56	39.4	42	26.6
	29 to 35	35	24.6	45	28.5
	36 to 42	19	13.4	38	24.0
	43 to 50	7	5.0	14	8.9
	Total	142	100.0	158	100.0
Body mass index	Underweight	3	2.1	19	12.0
	Normal weight	42	29.5	28	17.7
	Overweight	55	38.7	44	27.9
	Obesity I	38	26.7	58	36.7
	ObesityII	4	2.8	9	5.7
	Total	142	100.0	158	100.0
Place of Residence	Urban	112	78.9	103	65.1
	Rural	30	21.1	55	34.9
	Total	142	100.0	158	100.0
Educational Level for Mother	Illiterate	9	6.3	7	4.4
	Read and Write	21	14.8	42	26.6
	Primary	40	28.3	39	24.6
	Secondary	32	22.5	37	23.5
	Intermediate	6	4.2	15	9.5
	Bachelors	25	17.6	12	7.6
	postgraduate	9	6.3	6	3.8
	Total	142	100.0	158	100.0
Educational Level for Father	Illiterate	9	6.3	18	11.5
	Read and Write	16	11.3	30	18.9
	Primary	34	23.9	41	25.9
	Secondary	27	18.0	18	11.5
	Intermediate	10	6.7	16	10.1
	Bachelors	25	16.7	21	13.2
	postgraduate	21	19.3	14	8.9
	Total	142	100.0	158	100.0
Occupation	Employee	18	12.7	13	8.2
	Wife House	5	3.5	132	83.6
	Student	119	83.8	13	8.2
	Total	142	100.0	158	100.0
Economic Status	> million	42	29.6	34	21.5
	1-800 million	12	8.5	14	8.7
	800- 500	8	5.6	9	5.7
	< 500	80	56.3	101	63.9
	Total	142	100.0	158	100.0

Table 2: Common Outcomes that occurred among the Neonatal Participants in the Study

Characteristics		Multiparity		Grand Multiparity	
		Frequency	Percent	Frequency	Percent
Weight baby	2.500KG	57	40.1	67	42.4
	1.500 KG	7	5.0	13	8.2
	Macrosomia	11	7.7	24	15.2
	Normal Weight	67	47.2	54	34.2
	Total	142	100.0	158	100.0
Dead birth	live	132	93.0	135	85.4
	dead	10	7.0	23	14.6
	Total	142	100.0	158	100.0
Twins Male	Yes	0	0	5	3.2
	No	0	0	153	96.8
	Total	142	100.0	158	100.0
Twin Female	Yes	0		5	3.2
	No	0		153	96.8
	Total	142	100.0	158	100.0
Weight of twin male	2.500KG	0	0	3	2.0
	1.500 KG	0	0	2	1.2
	no found	142	0	153	96.8
	Total	142	100.0	158	100.0
Weight of twin female	2.500KG	0	0	3	2.0
	1.500 KG	0	0	2	1.2
	no found	142	0	153	96.8
	Total	142	100.0	158	100.0
jaundice	No	87	61.3	49	31.0
	yes	55	38.7	109	69.0
	Total	142	100.0	158	100.0
Abnormalities	yes	4	2.8	27	17.1
	No	138	97.2	131	82.9
	Total	142	100.0	158	100.0
RDS	yes	24	16.9	68	43.0
	No	118	83.1	90	57.0
	Total	142	100.0	158	100.0
Cyanosis	yes	32	22.5	74	46.8
	No	110	77.5	84	53.2
	Total	142	100.0	158	100.0
feeding	yes	91	64.1	97	61.4
	No	51	35.9	61	38.6
	Total	142	100.0	158	100.0
ICU	yes	31	21.8	74	46.8
	No	111	78.2	84	53.2
	Total	142	100.0	158	100.0
Early	yes	17	12.0	45	28.5

delivery	No	125	88.0	113	71.5
	Total	142	100.0	158	100.0
Meconium	Yes	21	14.8	45	28.5
	No	121	85.2	113	71.5
	Total	142	100.0	158	100.0
Apgar Score	0-5	23	16.2	12	7.6
	4-6	32	22.5	43	27.3
	7-10	87	61.3	103	65.1
	Total	142	100.0	158	100.0

DISCUSSION

In this study, the distribution of age between multiparity and grand multiparity women: multiparity women distributed within the age group (22 - 28 years) at a rate of (39. 4%), while for grand multiparity at the highest percentage, it was in the age group (29 - 35years) at a rate of (28. 5%). mean age for grand multiparity is 30.49 and for multiparity is27.88. Multiparity mothers had a higher rate of overweight BMI (38.7%) compared with (27.9%), while the comparison group had a higher rate of obesity I (36.7%), compared with (26.7%). studying the BMI of multi-parity women could help healthcare providers better understand and manage these risks during pregnancy and childbirth. It may also help develop interventions and policies that promote healthy weight management and prevent obesity-related health complications in multi-parity women. In contrast with a study conducted by Awuni, and others in south Ghanaian which shows that Obesity increased to 22.74% (121/532) in multiparous (2-3 children/woman) and increased further by 9.58% to 23.53% (12/51) in high parity women.6

The urban had the highest percentage of multiparity with a percentage of (78.9%), (57.5%) grand multiparous women live in rural area. may contribute to the prevalence of grand multiparity being higher in rural areas limited access to healthcare and family planning services, lower educational and income levels. A study conducted by Nyada compatible with multiparity conflict with grand multiparity which shows Slightly more than two-thirds (67.5%) of the multiparous women and (49.6%) of the grand multiparous women were urban.7

Most multiparity mothers had primary education, with a rate of (28.3%), compared to the highest percentage of grand multiparous mothers who can read and write at a rate of (26. 6%).

House wives have the highest percentage with a rate of (37.3%) (83.6%)for multiparity, & grand women. This may be due to economic conditions for families, especially in rural areas, as they seek fewer years of school to save time and money. In some villages and the countryside, marrying a girl at a young age is a custom and tradition In agreement with a study conducted by Tadese The lower prevalence in this study can be attributed to standard literacy level of grand multiparas, as over 52% had at least primary level of education. Close to two-thirds (63.1%) of the multiparous women and more than three-fourths (75.7%) of the grand multiparous women were housewives. 8

Earner across both groups, the highest percentage of Husband Job multiparity and grandmothers with a rate of (38.0% ,45.5%).

In contrast with a study conducted by Dasa, which shows Women's husbands were merchants (29.9 %)9. (63.9%) had a limited

incomes belong to grandmothers, compared with multiparity mothers, with a percentage of (61.9%) respectively. These results vary according to culture in societies and social traditions.

(42.4%) had babies weighing 2.5KG belongs to grand multiparity women while (47.2%) of multiparity had normal weight. one possible explanation is that multiple pregnancies can place greater demand on the mother's body, which can lead to inadequate maternal nutrition and weight gain, resulting in low birth weight for the baby.

A study conducted by Devaguru compatible with grand multiparity conflict with multiparity which shows. Grand multipara women showed the highest rates (53.70%) of LBW babies than multiparity10. Multiparity with a rate of (21.8%) babies were admitted to the ICU, and (12.0%) babies were delivered early. In comparison, Grand Multiparity with a rate of (46.8%) babies were admitted to the ICU, and (28.5%) were premature baby. (14.6%)perinatal mortality was significantly higher amongst the grand multiparous group These conditions may require specialized care in the NICU, in addition, grand multiparity may be associated with maternal health issues, including hypertension and diabetes, which can also increase the risk of NICU admission for the newborn. A parallel study conducted by Abdelmageed in Khartoum, Sudan an increased number of admissions to the neonatal intensive care unit in the grand multiparous group was observed when compared with the multiparous women group. grand multipara had a significantly higher prevalence of preterm birth, perinatal mortality was significantly higher amongst the grand multiparous group, the increased risk of fetal death or other adverse outcomes appears to be related to the increased risk of

complications associated with multiple pregnancies11.

Out of the total 142 cases of Multiparity, (38.7%) had jaundiced babies, out of the total 158 cases of Grand Multiparity, (69.0%) had jaundiced babies. These conditions can affect the delivery of oxygen and nutrients to the baby during pregnancy, which can lead to an increased risk of neonatal jaundice. Additionally, grand multiparous women may be at higher risk of pregnancy-related liver disorders such as intrahepatic cholestasis of pregnancy which can lead to jaundice in the newborn. However, the causes of neonatal jaundice can be complex and multifactorial, and may vary depending on individual circumstances. This study differs from that of Mbah and others, which showed that multiparity have fewer jaundiced neonates at a rate of 16.8% less likely to increase the incidence of jaundiced neonates12. (17.1%) grand multiparity had chromosomal abnormalities, while (2.8%)belongs to multiparity women. Suggest that advanced maternal age, which is more common in grand multiparity, may be a contributing factor. Maternal health status, such as pre-existing medical conditions, lifestyle factors, and access to healthcare, may also play a role. may genetic factors, their eggs are more likely to have chromosomal abnormalities that can increase the risk of congenital anomalies in their offspring. In particular, women over the age of 35 have an increased risk of having a child with Down syndrome, which is associated with a number of physical and intellectual disabilities. In contrast study conducted by Tadese and others that shows grand multiparity had chromosomal abnormalities with a rate of 6.7% while high percentage was 17.4% in multiparity13. (46.8%)belongs to grand multiparity, while (22.5%) had babies with Cyanosis, which

refers to a bluish tint to the skin caused by the lack of oxygen in the blood, can be a symptom of a variety of conditions, including lung and heart disease.

(61.3%) of multiparity infants had an Apgar score of 7-10, (65.1 %) for grand multiparity. Similarly, study conducted by Lungameni and others which shows that Apgar score of the neonates for the majority of the multiparity and grand was ranged between 7-10 at the fifth minute of the neonate life.14

(16.9%) had RDS belongs to multiparity while (43.0%) of grand multiparity had babies with RDS. contribute to RDS incidence in grand multiparity cases include limited access to prenatal care, maternal health conditions, and delivery method, also meconium baby. Similarly, study conducted by Rao in South India. Only 2.27 % of neonates admitted with RDS, were born to multipara mothers. While Grand multiparity Newborns were admitted with respiratory distress with an incidence of (17.6%). (28.5%)meconium baby in grandmother while (14.8%) for multiparity similarly in the study conducted by Roy and other which shows Incidence of grand multiparity was 10.75% than multiparity.1

CONCLUSION

Based on the discussion of results and their interpretations, the present study concludes that most of the study participants have statistically significant difference between the two groups in educational level majority multiparity had a primary education while grand multiparity read and write. Majority of grand multiparity had a limited income because their partner job is earner so can effect to the neonatal and maternal health. Majority of grand multiparity live in rural area this make them limited access to health care services and have difficulties to get antenatal care visit which impact to the maternal and neonatal health.

Most common neonatal out comes was statistically significant difference in term low birth weight in both group the majority was in grandmothers 42.4% to2.500KG, cyanosis RDS, jaundice.

References

1. K. T. Kibret, C. Chojenta, E. D'Arcy and D. Loxton BMJ open 2019 Vol. 9 Issue 4 Pages e027276.

2. M. Boah, A.-N. Issah, I. Demuyakor and D. Hyzam Medicine 2022 Vol. 101 Issue 40 Pages e30717.

3. H. Maraj and S. Kumari European Journal of Obstetrics & Gynecology and Reproductive Biology 2021 Vol. 263 Pages 15-19.

4. G. A. Tesema, W. S. Seretew, M. G. Worku and D. A. Angaw BMC Pregnancy and Childbirth 2021 Vol. 21 Issue 1 Pages 1-16

5. J. Savulescu, M. Labude, C. Barcellona, Z. Huang, M. K. Leverentz, V. Xafis, et al. Journal of Medical Ethics 2022.

6. T. K. Awuni, M. Mitsuaki, B. Ellahi and F. B. Zotor medRxiv 2022 Pages 2022.12. 19.22283683T. K. Awuni, M. Mitsuaki, B. Ellahi and F. B. ZotormedRxiv 2022 Pages 2022.12. 19.22283683

7. S. R. Nyada, C. E. Ebong, V. Mboua, C. Nsahlai, P. M. Emenguele, M. Mendoua, et alOpen Journal of Obstetrics and Gynecology 2023 Vol. 13 Issue 1 Pages 74-81

8. M. Tadese, S. Desta Tessema and B. Tsegaw Taye International Journal of General Medicine 2021 Pages 6539-6548

9. T. T. Dasa, M. A. Okunlola and Y. DessieFrontiers in Public Health 2022 Vol. 10

10. A. Devaguru, S. Gada, D. Potpalle, M. D. Eshwar and D. Purwar Cureus 2023 Vol. 15 Issue 5

11. E. Abdelmageed, H. Bahaeldin, A. Nadiah, A. Abdelbagi, R. Duria and A. IshagAfrican Health Sciences 2022 Vol. 22 Issue 1 Pages 164-71

12. M. I. Mbah, H. Emmanuel, M. S. Samari and B. T. Boshi Journal of Biosciences and Medicines 2022 Vol. 10 Issue 10 Pages 152-163

13. M. Tadese, S. Desta Tessema and B. Tsegaw Taye International Journal of General Medicine 2021 Pages 6539-6548

14. J. Lungameni University of Namibia 2022.

15. I. Roy, A. Burande and R. Choubey J OBGYN 2019 Vol. 5 Issue 2 Pages 103-106