WEST AFRICAN JOURNAL OF MEDICINE

Obstetric Outcome of Teenage Pregnancy in Kano, North-Western Nigeria

Résultat obstétricale des grossesses chez les adolescentes à Kano, Nigeria du Nord-Ouest

A. Omole-Ohonsi, R. A. Attah

ABSTRACT

BACKGROUND: **Teenage pregnancies are regarded as high risk, because they often occur outside marriage. There is the need to evaluate the outcome of teenage pregnancies in a predominantly Islamic society like Kano where most occur within marriage, and timely prenatal care is usually available to most of them.**

OBJECTIVE: **To review the obstetric outcome of teenage primigravida in Aminu Kano Teaching Hospital, Kano, Nigeria.**

METHODS: **A retrospective case-control study of 500 booked teenage primigravidae, who delivered in our labour ward from January 2002 to December 2005 (study group) was performed. Their obstetric outcome was compared with that of an equal number of booked primigravidae aged 20–34 years, who met the recruitment criteria and delivered immediately after a selected teenage mother (control group). The study variables of interest were the demographic characteristics of the women in the two groups, antenatal/intrapartum complications and neonatal outcome.**

RESULTS: **There were no significant differences in the mean birth weight, mean gestational age at delivery, mean height and perinatal mortality between the two groups, but mean maternal weight and body mass index (BMI) were higher among the older women. The teenage mothers had increased incidence of preterm labour and low birth weight infants (P < 0.05). The incidence of caesarean section and instrumental deliveries were lower among the teenage mothers.**

CONCLUSION: **The results of this study show that teenage mothers who receive good family and community support, timely quality antenatal care and deliver in the hospital, should expect similar obstetric outcome to that of their older peers. WAJM 2010; 29(5): 318–322.**

Keywords: **Teenage pregnancy, primigravida, booked, obstetric outcome, Kano.**

RÉSUMÉ

CONTEXTE: *Les grossesses d'adolescentes sont considérées comme à haut risque, parce qu'ils se produisent souvent en dehors du mariage. Il est nécessaire d'évaluer les résultats des grossesses d'adolescentes dans une société dominée par l'islam comme Kano où la plupart se produisent au sein du mariage, et en temps opportun des soins prénatals est généralement disponible pour la plupart d'entre eux.*

OBJECTIF: *Passer en revue les résultats obstétricaux des primigestes chez les adolescentes Aminu Kano Teaching Hospital Kano, au Nigeria.*

MÉTHODES: *Une étude rétrospective cas-témoins de 500 adolescentes primipares réservé, qui a prononcé dans notre salle de travail à partir de Janvier 2002 to Décembre 2005 (groupe d'étude) a été réalisée. Leurs résultats obstétriques été comparée à celle d'un nombre égal de primigestes réservé âgés de 20-34 ans, qui a rencontré les critères de recrutement et livré immédiatement après une mère adolescente sélectionnés (groupe témoin). Les variables de l'étude d'intérêt ont été les caractéristiques démographiques des femmes dans les deux groupes, prénatals complications intrapartum / et l'issue néonatale.*

RÉSULTATS: *Il n'y avait pas de différences significatives dans le poids de naissance moyen, la moyenne d'âge gestationnel à l'accouchement, la hauteur moyenne et la mortalité périnatale entre les deux groupes, mais le poids moyen de la mère et l'indice de masse corporelle (IMC) était plus élevé chez les femmes plus âgées. Les mères adolescentes a augmenté l'incidence des accouchements prématurés et des bébés de faible poids à la naissance (P <0,05). L'incidence des césariennes et extractions instrumentales ont été plus faibles chez les mères adolescentes.*

CONCLUSION: *Les résultats de cette étude montrent que les mères adolescentes qui reçoivent bonne famille et de soutien communautaire, opportune des soins de qualité prénatals et accoucher à l'hôpital, doivent s'attendre à des résultats similaires obstétriques à celle de leurs camarades plus âgés. WAJM 2010; 29 (5): 318–322.*

Mots-clés: *grossesse chez les adolescentes, primigeste, réservé, les résultats obstétriques, Kano.*

Department of Obstetrics and Gynaecology, Bayero University/Aminu Kano Teaching Hospital, Kano.
Correspondence: **Dr. A. Omole-Ohonsi,** Department of Obstetrics and Gynaecology, Aminu Kano Teaching Hospital, PMB 3452, Kano.
Tel No.- +234 80-37870540 Email: aomohonsi@yahoo.com
Abbreviations: BMI, Body Mass Index; **SCBU,** Special Care Baby Unit

INTRODUCTION

Teenage pregnancies that are carried on to delivery are usually regarded as a high risk pregnancy, with increased incidence of complications like preterm labour, low birth weight, intrauterine growth retardation, increased risk of instrumental delivery, caesarean section and perinatal mortality.[1–5] Pregnancy occurring in mothers aged between 11 and 19 years is classified as teenage pregnancy.[5–9] In recent years, there appears to be an increase in the number of teenage pregnancies due to various social and cultural changes.[2,5,7,10] Every year an excess of 14 million teenage girls give birth to a child, with most of these young mothers living in non-industrialized countries.[7,11–13] Worldwide rates of teenage pregnancy range from 2.9 per 1000 in developed countries to 143 per 1000 in Sub-Saharan Africa.[14,15] In Nigeria, 22% to 25% of girls marry before the age of 15 years, with higher rates in Northern Nigeria, especially among the Muslim Hausa/Fulani tribes in the North-West, where early marriage is common. Here the community and culture forbid a girl from having her first menstrual period in her parents' home, which makes female marriage around the age of puberty to be common.[7] In Southern Nigeria, the mainly Christian Yoruba and Igbo girls tend to marry in the second or even third decade of life, which makes teenage pregnancy to be unacceptable in their community, and it is associated with social stigma.[7,8,12,13] The delay in marriage in many communities is usually as a result of educational attainment, in order for the women to be socioeconomically viable, and assist their family not only economically but also in decision making.[16]

Teenage pregnancy is a social issue in developed countries, because it usually occurs outside of marriage, and carries a social stigma.[4] This has led to many studies and campaigns which attempt to uncover the causes and limit the number of teenage pregnancies.[5] In many countries and cultures in the developing countries, teenage pregnancy is usually within marriage and does not involve a social stigma.[7]

Poor obstetric outcome of teenagers has been reported in studies from areas where teenage pregnancy is unacceptable.[8,9] The teenagers are usually socially, psychologically and economically deprived or disadvantaged, unmarried or without a stable relationship, with unplanned and unwanted pregnancies, which result in either not seeking prenatal care at all or doing so late in their pregnancy.[8,9] These together with other concomitant problems such as alcoholism, cigarette smoking, or use of hard drugs, and nutritional deficiencies result in poor pregnancy outcome.[8–10] However, recent studies have shown that with good psychosocial support, prenatal care and hospital delivery, teenagers could have similar pregnancy outcome to that of the older women.[2,5,7,15]

In our community in North-Western Nigeria, teenage pregnancies are culturally and religiously acceptable. Most teenage mothers are married, have access to prenatal care and delivery methods of high standards in public hospitals, which make them to enjoy a similar degree of prenatal care as their older peers.

Where there will be no difference in the type of prenatal care and family support, as in our setting, comparison between teenage and non-teenage primigravidae could provide a reasonably clear picture of whether teenage mothers have worse obstetric outcomes or not. It is against this background that this study was undretaken, to evaluate the obstetric outcome of teenage pregnancies in our hospital.

SUBJECTS, MATERIALS, AND METHODS

This was a retrospective case-control study of the obstetric outcome of the first 500 booked teenage primigravida, who carried singleton pregnancies and delivered in our labour ward (study group) at Aminu Kano Teaching Hospital, Kano, from January 2002 to December 2005. Their obstetric outcome was compared to that of an equal number of booked primigravidae with singleton pregnancies, aged 20–34 years who delivered immediately after a selected teenage primigravida (control group).

In both groups, the recruited women were those who made at least four visits including the booking visit, with the last one at 36 weeks or more gestation to the antenatal clinic, and presented early in the labour ward. The exclusion criteria were those patients who did not meet the inclusion criteria or who had medical disorders in the pre-pregnant state.

Teenagers and older primigravida, who carried singleton pregnancies, and did not have medical disorders in the pre-pregnant state were selected, in-order to eliminate the influence of parity, multiple pregnancies, and medical disorders which were not pregnancy induced on the outcome. The controls selected were women who delivered immediately after a case, to ensure that they were both delivered on the same day by the same team, in order to eliminate the bias that could occur when they were managed by different teams. In the control group, the selected women were those aged 20–34 years, because this age group is associated with the best obstetric outcome.[17]

Aminu Kano Teaching Hospital, is a tertiary health care delivery centre that is located in Kano City, in predominantly Islamic Kano State, the most populous state in Nigeria, with a population of over ten million people (2006 Nigerian census), a land area of 20,760 square kilometers, and the centre of commerce in Northern Nigeria. The health facility receives patients' referrals from hospitals in the state, and neighbouring states of Jigawa and Katsina.

Definitions and Criteria

For the purpose of this study, teenager pregnancy was defined as that occuring between the ages of 13 and 19 years.[2] Pregnancy-induced hypertension (PIH) was the development of hypertension (a blood pressure of 140/90 mmHg and above), with or without proteinuria, in the second half of pregnancy on two or more occasions at least four hours apart, in a woman who has previously been normotensive, and in whom blood pressure returned to normal within six weeks of delivery. Gestational diabetes mellitus was the development of transient impaired glucose tolerance or diabetes during pregnancy. Diabetes mellitus is a raised fasting blood glucose level of >7.8mmol/litre or a level of >11.1 mmol/litre two hours following a 75grams glucose load. A

full glucose tolerance test that is performed six weeks following delivery will ensure that the diabetes has resolved. Antepartum haemorrhage (APH) was defined as bleeding from the genital tract after the 28th week of gestation and before delivery of the baby. Obstetric performance is the way in which the patient functions i.e. effectiveness of the patient in pregnancy, labour and puerperium. Obstetric outcome is the way the pregnancy, labour and puerperium turns out in the end.[16]

Study Variables

Three groups of study variables were of interest:

(i) maternal demographic characteristics: mean age, mean height, mean weight and mean BMI.

(ii) antenatal/intrapartum complications: pregnancy-induced hypertension (PIH), antepartum haemorrhage (APH), preterm labour, pre-labour spontaneous rupture of membranes (PROM), gestational diabetes mellitus, anaemia (packed cell volume (PCV) less than 30%), induction of labour, augmentation of labour, retained placenta, malpresentation, instrumental delivery and caesarean section.

(iii) Perinatal outcome: mean gestational age at delivery, mean birth weight, birth asphyxia (APGAR score of less than 7 at 5mins of life), Special Care Baby Unit (SCBU) admission, congenital abnormality, low birth weight (< 2.5kg), premature delivery (< 36 weeks gestation), neonatal sepsis, and perinatal mortality.

The data were obtained using pre-designed proforma. Statistical analysis was done with chi-square test and Z-test using a commercial statistical package (SPSS/PC version 11.0, SPSS Inc., Chicago IL. USA.). The Odds Ratio (OR) and 95% confidence intervals (CI) were determined where appropriate. Average values are given as mean ± SD. A P-value of less than 0.05 was considered significant.

RESULTS

The mean gestational age at delivery was 38.8 ± 2.3 weeks among the study group, while it was 38.4 ± 2.2 weeks among the control group. The mean birth weight among the study group was 3.105 ± 0.5kg, and 3.136 ± 0.8kg among the control group. There was no statistically significant difference in the mean gestational age at delivery and mean birth weight between the two groups. All the women in the two groups were married.

The indications for caesarean section were similar in the two groups and included failed induction of labour (2%), cephalo-pelvic disproportion (0.8%), foetal distress(0.6%), pre-eclampsia (0.8%) and antepartum haemorrhage (0.4%) among the study group, and failed induction of labour (4.0%), cephalo-pelvic disproportion (5.0%), foetal distress (1.6%), pre-eclampsia (1.4%) and antepartum haemorrhage (0.6%) among the control group.

The age range among the study group at the time of delivery was 15–19 years, with a mean age of 17.5 ± 2.4 years, while the mean age among the control group was 25.2 ± 1.3 years. There was no statistically significant difference in the mean height, but the mean weight and mean BMI were significantly lower in the study group, Table 1.

The study group had a statistically significant higher incidence of preterm labour (OR = 2.61, CI = 1.20-5.82, P< 0.05). There was significantly lower incidence of caesarean section (OR= 0.33, CI=0.20-0.56, P<0.05), and instrumental deliveries (OR=0.52, CI=0.29-0.92, P<0.05) among the study group, Table 2.

There was significantly higher occurrence of premature delivery (OR = 2.19, CI = 1.37-3.49, P < 0.05) and low birth

Table 1: Comparison of Màternal Age and Anthropometric Characteristics

Variable	Mean ± SD		P-Value
	Study Group n = 500	Control Group n = 500	
Age (years)	17.5 ± 2.4	25.2 ± 1.3	<0.05*
Height (m)	1.56 ± 5.4	1.56 ± 5.2	>0.05
Weight (Kg)	49.64 ± 2.8	54.21 ± 3.2	<0.05*
BMI (kg/m^2)	20.42 + 2.3	22.43 + 2.8	<0.05*

*, Statistically significant difference

Table 2: Antenatal and Intrapartum Complications in Study and Control Groups

Complication	Frequency, N(%)		OR	CI	P-Value
	Study Group n = 500	Control Group n = 500			
Pregnancy induced hypertension	34 (6.8)	38 (7.6)	0.89	0.53–1.47	>0.05
Gestational diabetes mellitus	2 (0.4)	3 (0.6)	0.67	0.08–4.89	>0.05
Anaemia	1 (0.2)	1 (0.2)	1.00	0.00–36.61	>0.05
Placenta praevia	5 (1.0)	7 (1.4)	0.71	0.20–2.51	>0.05
Abruptio placenta	3 (0.6)	4 (0.8)	0.75	0.13–3.96	>0.05
Preterm labour	28 (5.6)	10 (2.0)	2.61	1.20–5.82	<0.05*
Pre-labour PROM	11 (2.2)	6 (1.2)	1.85	0.63–5.66	>0.05
Malpresentation	4 (0.8)	3 (0.6)	1.34	0.25–7.53	>0.05
Augmentation of labour	102 (20.4)	93 (18.6)	1.12	0.81–1.55	>0.05
Caesarean section	23 (4.6)	63 (12.6)	0.33	0.20–5.6	<0.05*
Instrumental deliveries	21 (4.2)	39 (7.8)	0.52	0.29–0.92	<0.05*
Retained placenta	4 (0.8)	6 (1.2)	0.66	0.16–2.67	>0.05
Postpartum haemorrhage	13 (2.6)	12 (2.4)	1.09	0.46–2.57	>0.05

*, Statistically significant difference between the two groups

Table 3: Neonatal Complications in Study and Control Groups

Complication	Frequency, N(%)		OR	CI	P-Value
	Study Group n = 500	Control Group n = 500			
Prematurity	65 (13.0)	32 (6.4)	2.19	1.37–3.49	<0.05*
Low birth weight	67 (13.4)	33 (6.6)	2.19	1.39–3.47	<0.05*
Birth asphyxia	3 (0.6)	6 (1.2)	0.50	0.10–2.24	>0.05
Birth trauma	1 (0.2)	2 (0.4)	0.50	0.02–7.00	>0.05
Neonatal Sepsis	2 (0.4)	1 (0.2)	2.00	0.14–55.94	>0.05
Congenital abnormality	1 (0.2)	2 (0.4)	0.50	0.05–5.50	>0.05
SCBU admission	26 (5.2)	23 (4.6)	1.14	0.62–2.10	>0.05
Perinatal mortality	4 (0.8)	3 (0.6)	1.34	0.25–7.53	>0.05

* = Significant difference; SCBU= Special Care Baby Unit.

weight delivery (OR = 2.19, CI = 1.39–3.47, P < 0.05) among the study group. There was no significant difference in the incidence of birth asphyxia, birth trauma, congenital abnormality, Special Care Baby Unit (SCBU) admissions or perinatal mortality in the two groups. There was no maternal mortality in either group Table 3.

DISCUSSION

The favourable pregnancy outcome among teenage mothers in this study, in which the obstetric outcome of the teenage mothers was not significantly different from that of the older mothers aged 20–34 years, and the incidence of major complications except for preterm labour/deliveries and low birth weight babies being not increased, is similar to the findings from communities where teenage pregnancies are acceptable.[2,5,7] This may probably be because teenage mothers in these communities are usually married, have good support from the family, and can obtain timely obstetric service in public hospitals without social stigma or discrimination.[2,5,7]

The increased incidence of preterm labour/deliveries and low birth weight infants among teenage mothers, has been attributed to the higher frequency of sexually transmitted infections/ chorioamnionitis among them.[18,19] This was not the case in this study, where the incidence of neonatal sepsis was minimal in the two groups, and did not show significant difference between the two groups, probably because they were in a marital union and booked early.

The increased incidence of preterm labour/deliveries and low birth weight infants among the teenage mothers in this study may be related to the significantly lower mean maternal weight and mean BMI among them. Teenagers recently past their menarche, are likely to be thinner, with low maternal weight and BMI than their older physiologically more matured counterparts. Low mean weight and mean BMI at conception or delivery is associated with preterm labour and low birth weight babies as well as prematurity.[20,21]

The biological risks that have been associated with young maternal age in studies from communities where teenage pregnancies are not acceptable and tolerated, could have been because most of the women were unmarried, stigmatized with toxic exposures like cigarette smoking and alcohol consumption, and lack timely and adequate prenatal care.[3,8,12,15] Labour and deliveries are usually conducted outside the hospitals, poorly supervised because of lack of family/social support, with adverse feto-maternal outcome.[3] The resultant psychological depression aggravates the poor state of these teenage mothers.[2,5]

Caesarean section/instrumental delivery rates were lower among the teenage mothers, which agree with the findings in studies from communities where teenage mothers are accepted and book early.[2,5,7] This has been attributed to fewer complications among booked teenage mothers that may require intervention and caesarean section, as well as the significantly higher incidence of low birth weight infants in teenage pregnancies, and higher chance of spontaneous vaginal delivery.[2,5]

Teenagers have been said to be less physically matured with smaller size of the bony pelvis compared to older mothers.[9,10] This has been disproved in other studies, where it was found that if teenage mothers aged 14 years or more are taking haematinics and good nutrition, pregnancy enhances longitudinal growth in these teenagers, with the increment being greater in nulliparae compared to multiparae, and this longitudinal growth also enhances the growth of the bony pelvis in these adolescent.[2,5] The effect of pregnancy on the longitudinal growth can be seen in this study where there was no difference in the mean height between the two groups, but the mean weight and BMI were significantly higher among the older mothers. All our teenage mothers were more than 14 years old at the time of delivery, which might have made them to benefit from the longitudinal growth enhancement of pregnancy, with higher chance of spontaneous vaginal delivery.

The good obstetric outcome among these booked teenagers, has been said to be a reflection of nature's design, that humans should reproduce when they are young and fertile, instead of procrastinating until end of the reproductive life span.[2]

Conclusion

Teenage mothers who receive timely, adequate antenatal care and hospital delivery, as well as financial, social and psychological support from their family and community should expect favourable obstetric outcome. Community campaign is necessary in our society where early marriage is common, in-order to reach out to the teenagers, parents, husbands, community and religious leaders, to allow the teenage mothers who are not socioeconomically empowered, to book early for antenatal care and deliver in the hospitals. This will go a long way to reducing feto-maternal morbidity and mortality from teenage pregnancies, and meet the Millennium Development Goals 4 and 5.[22] Provision of free or subsidized antenatal care and delivery services is essential in order to achieve these goals.

Despite these favourable obstetric outcomes among booked teenage

mothers, women should be aware of the medical and social risks that are associated with early child bearing, so that they can make informed decisions on when to start their families.

However, because of the biases inevitable in this hospital-based study, and the small sample size, larger prospective multicentre studies will be required to confirm these findings.

REFERENCES

1. Fraser AM, Brockert JE, Ward RH. Association of young maternal age with adverse reproductive outcomes. *N Engl J Med.* 1995; **332:** 1113–7.
2. Lao TT, Ho LF. Obstetric outcome of teenage pregnancies. Human Reproduction. 1998; **13:** 3228–32.
3. Bacci A, Manhica GM, Machungo F. Outcome of teenage pregnancy in Maputo, Mozambique. *Int J Gynaecol Obstet.* 1993; **40:** 19–23.
4. McAnarney ER. Young maternal age and adverse neonatal outcome. *Am J Dis Child.* 1987; **141:** 1053–9.
5. Lao TT, Ho LF. The obstetric implications of teenage pregnancy. *Human Reproduction.* 1997; **12:** 2303–5.
6. Mahfouz AAR, El-Said MM, Al-Erian RAG, Hamid A.M. Teenage pregnancy: are teenagers a high risk group? *Eur J Obstet Gynaecol Reprod Biol.* 1995; **59:** 17–20.
7. Mutihir JT, Maduka WE. Comparison of pregnancy outcome between teenager and older primigravidae in Jos University Teaching Hospital, Jos, North-Central Nigeria. *Annals of African Medicine.* 2006; **5:** 101–5.
8. Okpani AOU, Ikimalo J, John CT, Briggs ND. Teenage pregnancy. *Tropical Journal of Obstetrics and Gynaecology.* 1995; **12:** 34–5.
9. Moerman ML. Growth of the birth canal in adolescent girls. *Am J Obstet Gynaecol.* 1982; **143:** 528–32.
10. Khwaja SS, Al-Sibai MH, Al-Suleiman AS, El-Zibdeh M,Y. Obstetrics outcome of adolescents. *Acta Obstet Gynaecol Scand.* 1986; **65:** 57–61.
11. Jimoh AS, Abdul IF. Outcome of teenage pregnancies in Ilorin, Nigeria. *Tropical Journal of Obstetrics and Gynaecology.* 2004; **21:** 27–31.
12. Nnatu S. Obstetric performance of teenage mothers in Nigeria. *J Obstet Gynaecol East Central Afr.* 1991; **9:** 62–4.
13. Nwobodo EI, Adoke KU. Obstetric outcome of teenage pregnancies at a tertiary care hospital in Sokoto, Nigeria. *Tropical Journal of Obstetrics and Gynaecology.* 2005; **22:** 168–70.
14. Konje JC, Palmer A, Watson A, Hay DM, Imrie A, Ewings P. Early teenage pregnancies in Hull. *Br J Obstet Gynaecol.* 1992; **99:** 969–73.
15. Loto OM, Ezechi OC, Kalu BKE, Lotto AB, Ezechi OL. Poor Obstetric performance of teenagers: is it age – or quality of care-related? *J Obstet Gynaecol* 2004; **24:** 395–8.
16. Omole-Ohonsi A, Ashimi A. Advanced Maternal Age and Pregnancy outcome. *Western Nigeria Journal Medical Sciences.* 2008, **1:** 14–9.
17. Oboro VO, Dare FO. Pregnancy outcome in nulliparous women aged 35 or older. *WAJM.* 2006; **25:** 65–8.
18. Delvaux T, Buve A, Laga M. Inaccurate statements about sexually transmitted infections. *Am J Obstet Gynaecol.* 2001; **184:** 1308–9.
19. Hillier S.L, Nugent R.P, Eschenbach D.A, Krohn M.A, Gibbs R.S, Martin D.H *et al*. Association between Bacterial Vaginosis and Preterm Delivey of a Low-Birth-Weight Infant. *N Engl J Med.* 1995; **333:** 1737–42.
20. Kramer M.S. Determinants of low birth weight: Methodological assessment and Meta-analysis. Bull. *World Health Organ.* 1987; **65:** 663–737.
21. Ehrenberg H, Dierker L, Milluzzi C, Mercer B. Low maternal weight, failure to thrive in pregnancy, and adverse pregnancy outcomes. *Am J Obstet Gynaecol.* 2003; **189:** 1726–30.
22. United Nations Millennium Declaration. 2000. A/RES/55/2. 18 September, New York. Available at http/www.un.org/millennium/declaration/are5552c.pdf. sited on 15th march 2003.