

Pregnancy Outcome in the Obese Nigerian

Samuel N. Obi and Ejike A. Obute

Department of Obstetrics & Gynaecology, Federal Medical Centre, Abakaliki, Nigeria

Abstract

Background: An adult is considered obese if the body mass index (BMI) is 27kg/m² or more. Until now, obesity has been a problem of developed countries, but it is gradually spreading to the developing world. This is a cause for concern since obesity is a predisposing factor for many chronic diseases that will in turn affect pregnancy.

Objectives: This study was undertaken to determine the influence of obesity on pregnancy outcome.

Study Design And Setting: A prospective study in a federal medical centre.

Method: Between January 1999 and December 2001, 220 pregnant women with BMI of 27kg/m² or more who registered for antenatal care at federal medical centre were identified. A control group (BMI less than 27kg/m²) matched for age, educational status, parity and social class were selected and various maternal and perinatal variables were compared between the groups.

Results: Antenatal attendances by both groups were generally poor and ignorance was a major factor. Obesity was associated with increasing parity and higher social class. It frequently results in an increased incidence of hypertension (p=0.0001), diabetes mellitus (p=0.0001), caesarean section (p<0.0001), obstructed labour (p=0.02) and prolonged duration of hospital stay (p<0.0001). Also the babies of these obese mothers are significantly more likely to have adverse perinatal outcome including macrosomia (58.2% Vs 12% p<0.0001), birth asphyxia (27.3% Vs 9% p<0.0001), birth trauma (10% Vs 1% p<0.0001), neonatal admission to intensive care unit (31.8% Vs 2.5% p<0.0001) and higher perinatal mortality (10.5% Vs 2% p=0.0004).

Conclusion: Pregnancy in obese women presents a certain amount of risk and there is need for close surveillance to reduce these obesity related complications in pregnancy. This is achievable through multidisciplinary antenatal management involving the obstetrician, physician, neonatologist, dietitian and the social health worker.

Key Words: Pregnancy, obesity, outcome, Nigeria

Introduction

Despite various advances towards better obstetric outcome, the obese pregnant patients still experience pregnancy complications¹. In advanced countries, pre-pregnancy counseling², weight gain recommendation during pregnancy³, frequent use of ultrasound for physical examination⁴ and sometimes routine caesarean section⁵ for delivery of macrosomic babies were part of the measures to reduce these complications. Bariatric surgery⁴, which restricts the patients' food intake and thus reduces the women's weight, is also a method of management of obesity.

Most developing countries (including Nigeria) have to contend with poverty, infections and infestations, which tends to overshadow the problem of obesity among pregnant women in these areas. Previous studies from Nigeria^{6,7,8} concentrated on macrosomia, which is only one aspect of the outcome of pregnancy in obese women.

In this paper, we examined the incidence, sociodemographic factors and pregnancy outcome among obese Nigeria women and compared them to the findings among the non-obese group.

Materials and Methods

This prospective study was carried out at federal

medical centre Abakaliki, Ebonyi state, south East Nigeria between January 1999 and December 2001. This hospital is one of the largest in the city and serves as both general hospital and tertiary referral centre for the state. The subjects consisted of all pregnant women who registered for prenatal care in the first trimester with a body mass index (BMI) greater than 27kg/m² within the study period. Information was collected on their sociodemographic characteristics, antenatal attendance, various pregnancy outcomes including mode of delivery, fetal weight, perinatal and maternal complications.

We took as controls 200 pregnant women (BMI <27kg/m²) matched for age, educational level, parity and social class with the obese mothers and each scheduling an appointment for prenatal immediately after a pregnant obese mother. Both groups were followed up until delivery and the various maternal and perinatal variables were compared between the two groups. Data analysis was done with graph pad prism software⁹. The results are expressed as percentages, mean ± standard deviation. The student's t- and the chi-square tests were used as appropriate to test the level of

Correspondence: Dr. S.N. Obi, Department Of Obstetrics & Gynaecology, Federal Medical Centre P. M. B. 102 Abakaliki Ebonyi State, Nigeria.
E-mail: Nobis@rbow.net

significance in the differences observed between the two groups. A p- value of <0.05 was taken as significant. Obesity in this study is defined as body mass index greater than 27kg/m² ¹⁰.

Results

Of the 2860 deliveries that took place within the study period, 220 of them occurred among obese mothers, giving an incidence of 7.7 percent.

Table 1 showed the sociodemographic characteristics of the obese and non-obese mothers. 67.3 % of these obese mothers were in the age range 25-34 years, and grandmultiparous women accounted for majority (54.5%) of them. 9.1% of them had no formal education, while 34.1%, 50%, and 6.8% had primary, secondary and tertiary education respectively. Social class I and II constituted 55.5% of the population.

The mean number of antenatal visits in the obese women 3.45(±2.9) and controls 4.04(±3.3) were generally low and the difference was not statistically significant.

The obese pregnant women are significantly more likely to have hypertension (22.7% Vs 9%, p<0.0001), diabetes mellitus (12.7% Vs 1%, p<0.0001) and more

Table 1: Socio-demographic Characteristics of Obese and non-obese mothers

	Obese N=220 No (%)	Non-Obese N=200 No. (%)
Age		
20-24	36 (16.4)	33 (16.5)
25-29	82 (37.3)	78 (39.0)
30-34	66 (30.0)	59 (29.5)
35-39	32 (14.6)	27 (13.5)
40-44	4(1.8)	3 (1.5)
Parity		
1-2	40 (18.2)	42 (21.0)
3-4	60 (27.3)	67 (33.5)
≥5	120 (54.5)	91 (45.5)
Educational Status:		
None	20 (9.1)	25 (12.5)
Primary	75 (34.1)	71 (35.5)
Secondary	110 (50.0)	93 (46.5)
Tertiary	15 (6.8)	11 (5.5)
Social Class¹⁷		
i	62 (28.2)	58 (29.0)
ii	60 (27.3)	55 (27.5)
iii	42 (19.1)	36 (18.0)
iv	38 (17.3)	31 (16.5)
v	18 (8.2)	20 (10.0)

Frequent caesarean section (36.4% Vs 15%) as shown in

table 2. Also the incidence of obstructed labour, perineal tear and postpartum haemorrhage were significantly higher in the obese than control. There was statistically significant difference in the mean duration of hospital stay between the obese and control.

Table 2: Maternal Outcome/ Complications

Parameters	Obese (n=220)	Non -obese (n=200)	X²/t value	p-value
Hypertension	50 (22.7%)	18 (9%)	14.55	0.0001
Diabetes mellitus	28 (12.7%)	2 (1%)	21.72	0.0001
Mode of delivery				
Caesarean section	80(36.4%)	30(15%)		
Vaginal delivery	140(63.6%)	170(85%)	24.73	<0001
Obstructed labour	15(6.8%)	4 (2%)	5.63	0.02
Perineal tear	28(12.7%)	3(1.5%)	19.32	<0.0001
Blood loss (=500ml)	70(31.8%)	15(7.5%)	38.38	<0.0001
Hospital stay				
Days (mean ±SD)				
Caesarean section	8.2(±1.5)	7 (±1.0)	9.73	<0.0001
Vaginal delivery	4.0(±2.2)	1.5 (±1.0)		
No.of antenatal visits	3.45(± 2.9)	4.04(± 3.3)	1.94	NS

In Table 3, there was statistically significant difference in the birth weight between the obese subjects and controls (58.2% Vs 12%, p<0.0001). The obese pregnant women are at high risk of adverse perinatal outcome including birth asphyxia (27.3% Vs 9%, p<0.0001), birth trauma (10% Vs 1%, p<0.0001), neonatal admission to intensive care unit (31.5% Vs 2.5%, p<0.0001) and increased perinatal mortality (10.5% Vs 2%, p<0.0004). The frequencies of congenital abnormality were similar in both the obese mothers and controls (0.9% and 0.5% respectively).

Table 3.

Parameters	Obese (n=220)	Non-obese (n=200)	X²	P-value
Macrosomia (birth weight >4kg)	128(58.2%)	24(12%)	32.21	p<0.0001
Birth as phyxia(1min. Apgar score≥6)	60(27.3%)	18(9%)	21.13	p<0.0001
Birth trauma	22(10%)	(1%)	17.73	p<0.0001
Neonatal admission to Intensive care unit	70(31.8%)	5(2.5%)	69.39	p<0.0001
Perinatal mortality	23(10.5%)	4(2%)	12.45	p=0.0004
Congenital abnormality	2(0.9%)	1(0.5%)	1.09	NS

NS= Not significant

Discussion

The 7.7 percent incidence of obesity among pregnant women in this study is high. This therefore demonstrates that obesity has become a problem of public health magnitude not only in the developed countries but also among city dwellers in the developing countries. The reasons for this observation may be because of nutrition transition to lipid-rich diet and reduced physical activity in city dwellers. The change in dietary habit is associated with improvement in socioeconomic status. This is evident in this study, which demonstrated a significant association between obesity and social class, with patients in social I and II more likely to be obese. This finding is contrary to studies in the western world, which showed an inverse relationship between degree of obesity and socioeconomic status¹¹.

The parity of the patients showed direct relationship with obesity in this study. This parity-related weight change may be because pregnancy is a period of positive energy balance during which some women gain excessive weight. Although, there was no clear association between age and obesity in this study, other authors¹² have reported an increase in body weight and body mass index with age.

The health consequences of obesity in adult have been shown to encompass both metabolic and cardiovascular complications¹³. It is therefore not surprising that hypertension and diabetes mellitus were significantly more likely among the obese patients than control. Macrosomia, a common feature of obese pregnant patient accounted for the higher incidence of birth trauma, birth asphyxia, obstructed labour, perineal tear and caesarean section noted among these subjects. These in turn resulted in high maternal morbidity and perinatal mortality. While there are no clinical or sonographic parameters that can reliably or prospectively identify the individual macrosomic fetus, some investigators¹⁴ have advocated the use of caesarean section for suspected macrosomic fetuses to avoid potential birth trauma, shoulder dystocia and other complications during vaginal delivery. Others¹⁵ however reported that routine caesarean section for macrosomic fetus is unwarranted because about 90 percent of cases of shoulder dystocia still occur in normally grown fetuses. Anaesthesia and surgery in these obese patients can be problematic and would expose many mothers to a substantially increased risk for morbidity and mortality.

The attendances to prenatal clinic by these mothers were poor and ignorance was a major factor. This is in spite of the level of education attained by these mothers. For most of them, registration at the antenatal clinic was to guarantee easy access to hospital in case complications arises during pregnancy or labour. One therefore wonders whether the antenatal health talk

delivered to pregnant mothers during visits was having the desired impact. This irregular antenatal attendance must have contributed to the significantly higher fetomaternal complications among these obese mothers because optimal prenatal care is difficult to achieve under such conditions. Previous study¹⁶ highlighted this problem of poor clinic attendance by pregnant mothers and ways of improving it.

Considering the economic cost of management of obesity related complications in pregnancy, surveillance and prevention program (including health education) are needed to stem the growth of these problems. This is achievable through multidisciplinary antenatal management involving the obstetrician, physician, neonatologist, dietitian and the social health workers.

References

1. Ogunyemi D, Hullett S, Leeper J, Risk A, Prepregnancy body mass index, weight gain during pregnancy and perinatal outcome in a rural black population. *J. Matern. Fetal Med.* 1998; 7 (4): 190-193
2. Mancuso A, D'Anna R, Leonardi R. Pregnancy in the obese patient. *Eur. J. Obstet. Gynecol. Reprod. Biol.* 1991; 39 (2): 83-86.
3. Johnson J.W, Longmate J.A, Frentzen B. Excessive maternal weight and pregnancy outcome. *Am. J. Obstet. Gynecol.* 1992; 167 (2): 353-372.
4. Wittgrove A.C, Jester L, Wittgrove P, Clark G.W. Pregnancy following gastric bypass for morbid obesity. *Obes. Surg.* 1998; 8 (4): 461-466.
5. Menticoglou S.M, Manning F.A, Morrison I, Harman C.R. Must macrosomic fetuses be delivered by a caesarean section? A review of outcome of 786 babies greater than or equal to 4,500g. *Aust. N. J. Obstet. Gynaecol.* 1992; 32 (2): 100-103.
6. Fakeye O; The incidence, sociobiological factors and obstetric complications associated with large infants at Ilorin, Nigeria. *Int. J. Gynaecol. Obstet.* 1988; 27 (3): 343-347.
7. Megafu U, Ozumba B.C; Obstetric complications of macrosomic babies in African women. *Int. J. Gynaecol. Obstet.* 1988; 26 (2): 197-202.
8. Abudu O.O, Awonuga A.O; Fetal macrosomia and pregnancy outcome in Lagos. *Int. J. Gynaecol. Obstet.* 1989; 28 (3): 257-262.
9. Graph Pad Prism version 2.00; GPA-23053-825. Graph Pad Software Incorporation. San Diego, USA 1995.
10. World Health Organisation (WHO) working group. Use and interpretation of anthropometric indicators of Nutritional status. *Bulletin of WHO* 1986; 64: 929-941.
11. Sorensen T.I; Socioeconomic aspects of obesity: causes or effects. *Int. J. Obes. Relat. Disord.* 1995; 19 suppl 6: S6-8.
12. Brown J.E, Kaye S.A, Folsom A.R; Parity-related weight change in women *Int. J. Obes. Relat. Metab. Disord.* 1992; 16 (9): 627-631.
13. Kliegman R.M, Gross T; Perinatal problems of the obese mother and her infant. *Obstet. Gynecol.* 1985; 66 (3): 299-306.

- Grunstein S. Risk in the vaginal delivery of the large fetus. *Aust. N. J. Obstet. Gynaecol.* 1984; 24 (3): 178-181.
15. Naef R.W, Martin J.N Jr. Emergent management of shoulder dystocia. *Obstet. Gynecol. Clin. North Am.* 1995; 22 (2): 247-259.
 16. Obi S.N, Ozumba B.C, Okaro J.M; Emergency obstetric referrals at a university Teaching Hospital, Nigeria. *East Afr. Med. J.* 2001; 78 (5): 45-47.
 17. Tuckett D. (Editor) *Work, Life chances and Life styles.* In: *Introduction to medical sociology.* Tavistock Publication, London 1976: 110-155.