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Socio-clinical factors related to the perinatal outcome of teenage pregnancies in a Nigerian teaching hospital

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Abstract Background: The incidence of teenage pregnancies is rising in most parts of the world. This is associated with a wide spectrum of complications in the teenage mothers and their infants.

Objective: To determine the social and clinical factors related to perinatal outcome of teenage pregnancies.

Methods: A retrospective study of mothers aged < 20 years managed at Olabisi Onabanjo University Teaching Hospital, Sagamu between 2008 and 2011 was done. Mothers aged 20 years and above were used as controls and comparisons were made using bivariate analysis.

Results: The prevalence of teenage pregnancies was 1.3%. The mean age of the cases was 17.8 years (range of 16 - 19 years). Compared to the controls,

significantly higher proportions of the cases had less than senior secondary education, were unmarried, with relatively younger spouses who were mainly unemployed or employed as unskilled workers. In addition, teenage mothers were significantly more likely to have preterm deliveries and babies with 1-minute Apgar scores <7. Stillbirth rate, early neonatal mortality rate and hospitalization rate were also higher among the cases. Poor perinatal outcome was more common among the cases in the lower socio-economic classes and those with low education.

Conclusion: Socio-economic factors are directly or indirectly related to poor outcomes of teenage pregnancies.

Key words: Perinatal mortality, Socio-economic factors, Stillbirth, Teenage pregnancy

Introduction

Globally, teenage or school-age pregnancies have been a matter of concern mainly because of the risks to the health and well-being of underage mothers.¹ These include the risks of pregnancy-related morbidities and deaths. Equally important are the adverse social effects of school-age pregnancies such as abrupt termination of education, disruption of the family system and premature assumption of the duties and responsibilities of parenthood which school-age mothers are usually ill-prepared for.

There are suggestions that the prevalence of teenage pregnancies may be on the increase in some parts of the developed world.² This trend may be explained in terms of the declining age of menarche and increasing awareness and knowledge of sexuality without commensurate good use of contraception. The situation is expected to be worse in the developing world. Beyond the concerns for the health of the teenage mothers, there should also be concerns for the survival and well-being of the products of teenage pregnancies. Teenage motherhood has

been documented to contribute to social disadvantage which adversely affects morbidity among hospitalised children.³ This observation may be related to poor knowledge of teenage mothers about health and prevention of diseases as well as poor utilisation of available health services for socio-economic and cultural reasons.

Globally, perinatal and neonatal deaths contribute significantly to childhood deaths and efforts are presently directed at minimising perinatal and neonatal deaths as a means of reducing childhood deaths.⁴ The risk of morbidities and mortality in the products of teenage pregnancy may be directly related to poor care during pregnancy, unsupervised difficult deliveries and the associated complications and indirectly, to unfavourable social circumstances of the teenage mothers. Several studies have described the pattern of perinatal morbidities and mortality among the products of teenage pregnancies.⁵⁻⁷ The survival of the products of teenage pregnancies obviously depends on many factors related to the quality of maternity services and neonatal services available to pregnant teenagers. This is related to observations from

other studies that the accessibility and utilisation of quality prenatal care and delivery services may be affected by several socio-economic factors.⁸

While efforts are going on to curb the trend of increasing incidence of teenage pregnancies, it is equally important to ensure better survival of the products of teenage pregnancy. One important step towards this goal is a study of the epidemiological factors which may influence the survival of the products of teenage pregnancies. Therefore, this study aims to describe the social and clinical factors affecting the perinatal outcome of teenage pregnancies in the locality.

Methods

The study was conducted at the Neonatal Ward and Maternity Unit of the Olabisi Onabanjo University Teaching Hospital, Sagamu between January 2008 and December 2011. The hospital serves as a referral centre for private and public primary and secondary health institutions in Ogun State and parts of the neighbouring Lagos and Ondo states. Thus, women of all socioeconomic background utilize the services in the hospital.

The subjects were parturient aged less than 20 years of age and their babies. Purposive sampling was adopted for the selection of cases while systematic random sampling was used to recruit the controls. Thus, for every teenage parturient, the next two parturient aged 20 years and above with their babies were used as controls. The hospital records of the subjects and their babies were retrieved and studied.

The data obtained included the maternal age, parity, marital status, details of prenatal care, details of delivery care, obstetric complications, outcome of pregnancy and the outcome of hospitalization of the babies. The highest educational attainment and present occupation of the parturient and their spouses were recorded. The socioeconomic status of each family was derived from the education and occupation of both partners.⁹ The socioeconomic status of the subjects were classified into upper (classes I and II), middle (class III) and lower (classes IV and V). Poor perinatal outcome was defined as the occurrence of still birth or early neonatal death. The cases and the controls were compared for social and clinical factors related to pregnancy outcome.

The data were analyzed with SPSS version 17.0 using descriptive and inferential statistical methods such as the Student's t-test and the Pearson's Chi-square test. The p-value less than 0.05 defined statistical significance (95% confidence level).

Results

Out of a total of 1858 parturient, 25 were teenagers giving a teenage pregnancy prevalence of 1.3%. Twenty

five teenage mothers and 50 mothers aged 20 years or more were studied. Overall, there were 75 mothers and 78 babies; one of the cases and two of the controls had multiple births.

The age of the cases ranged between 16 and 19 years with a mean of 17.8 ± 1.3 years. Table 1 shows that 96.0% were nulliparous, 44.0% were unmarried and 44.0% had less than senior secondary education.

Table 1: Socio-demographic characteristics of Teenage Mothers

Characteristics	Frequency	Percentages
<i>Age (years)</i>		
16	5	20.0
17	5	20.0
18	8	32.0
19	7	28.0
<i>Education</i>		
Primary	10	40.0
Junior Secondary	1	4.0
Senior Secondary	12	48.0
Post-secondary	2	8.0
<i>Parity</i>		
0	24	96.0
1	1	4.0
<i>Marital status</i>		
Unmarried	11	44.0
Married	14	56.0

Characteristics of the spouses

The spouses of the cases were aged 21-30 years while the spouses of the controls were aged 28-53 years. None of the spouses in both groups were teenagers. Most of the spouses of the cases (72%) were aged 20-24 years compared with 8% of the controls ($p < 0.001$). The mean age of the spouses of the cases was significantly less than the mean age of the comparison group: 24.9 ± 2.5 years Vs 36.4 ± 5.7 years; $t = 9.6$, $p < 0.0001$.

Occupation: Six (24%) of the spouses of cases were skilled workers and professionals compared to 25 (50%) of the spouses of the controls ($p = 0.003$).

Socioeconomic status: Only three (12.0%) of the cases compared with 19 (38.0%) of the controls belonged to socioeconomic classes I to III. This difference was statistically significant ($p = 0.02$).

Comparison of cases and controls

Table 2 shows that significantly higher proportion of the cases compared with the controls, had less than senior secondary education ($p = 0.029$), were nulliparous ($p < 0.0001$), unbooked for antenatal care ($p = 0.001$), had morbidities ($p = 0.005$), had obstetric complications ($p = 0.029$) and presented in preterm labour ($p = 0.004$). Twenty (80.0%) of the 25 cases compared to 20 (40.0%) of the 50 controls presented with emergencies in labour and following referral from other health facilities ($\chi^2 = 10.72$; $p = 0.001$).

erty, poor knowledge about and poor access to contraception and changes in societal values and norms.¹

While teenage pregnancies constituted between 5.2% and 13% in Australia and USA,¹ the prevalence rate (1.3%) obtained in the present study appeared unexpectedly low. We speculate that most cases of teenage pregnancy will not present in the Teaching Hospital unless it becomes absolutely necessary due to the shame arising from cultural disapproval of teenage pregnancy. This obviously reflected in the finding that most of the cases presented with emergencies in labour following referral from other health facilities including the Traditional Birth Homes. Therefore, a community-based study is likely to yield a higher prevalence rate of teenage pregnancy in the locality. Nevertheless, the prevalence rate of 1.3% was similar to 1.6% obtained from Enugu, eastern Nigeria but lower than 6.5% reported in Calabar, southern Nigeria.^{7, 11} In India, the prevalence of teenage pregnancy was 4.1%.⁵ The observed differences may be attributed to diversity in the populations studied. Specifically, the present study was hospital-based and may not be truly representative of the incidence of teenage pregnancy in the community. Nevertheless, it is still a cause for concern that girls who should still be in school get pregnant when they are physiologically, anatomically and emotionally ill-prepared for motherhood.

The mean age of the teenagers studied was 17.8 years, similar to mean ages of 17.0 years and 17.4 years reported in South Africa and Iran^{12, 13} but slightly higher than 16.7 years for the Enugu population.⁷ Interestingly, the Sagamu population of teenage mothers were relatively older (16 to 19 years) compared to the comparative groups (13 to 18 years).

It is remarkable that 44% of the Sagamu population of teenage mothers were unmarried in consonance with previous reports from Ilesha, another western Nigeria setting.¹⁴ This observation may be related to previous reports that teenage pregnancies were often described as "accidental or a mistake".¹⁴ This is not unexpected since the school age is characterised by increasing sexual awareness, sexuality and the tendencies to experiment with sexuality without taking precautions in terms of contraception.¹⁵ This is supported by the observation in this study that, most of the teenage mothers had less than senior secondary education or had spent less than ten years in basic education. This might have been accentuated by factors like dislike for school, persistent instabilities in school calendars, poor family background, unhappy childhood and low expectations for the future.¹⁶ On the other hand, the Enugu population of teenage mothers⁷ were mostly married, suggesting probable cultural approval of early marriage, if need be, in that part of the country.

Most of the spouses in the present study were aged 20 to 24 years unlike in the earlier report from Ilesha,¹⁴ almost three decades ago, where most of the spouses were also teenagers. In spite of higher age of the spouses in the present study, most of them belonged to the lower socioeconomic classes (IV and V), employed as unskilled workers or unemployed. This may imply poor utilization

of maternity services as previously observed.⁸ Thus, the poorer booking status for antenatal care, the higher frequencies of pregnancy-related morbidities and obstetric complications among teenage mothers in this study^{6, 7, 17} may be worse in the presence of poor socio-economic statuses of the spouses and poor social supports generally.

The observed higher rate of preterm deliveries by teenage mothers compared to mothers in the older age group was similar to previous reports from within^{7, 18} and outside the country.^{5, 13, 19} This may be quite challenging in the face of higher risks of morbidities and mortality associated with preterm infants compared to term infants. This may even be more daunting in the developing world where the infrastructural supports required for the care of very preterm infants may be unavailable or very expensive.²⁰ The implication of this is that the increasing prevalence of teenage pregnancies may be a cogent reason for policy makers to increase the funding of the health sector including the provision of well-equipped neonatal intensive care units as earlier suggested.²¹

Stillbirth rates, perinatal mortality rates and neonatal mortality rates were higher among the infants of teenage mothers in the present study similar to previous reports.^{7, 13, 19} This observation is challenging since the reduction of perinatal and neonatal mortality rates had been identified to be crucial to the reduction of childhood deaths as desired according to the tenets of the Fourth Millennium Development Goals as earlier suggested.^{4, 22} One step towards achieving this goal is the improvement of the quality of obstetric and neonatal care available, particularly to teenage mothers. Given the peculiarities of the developing world, where pregnant teenagers may not access orthodox health services for reasons of guilt, shame and loss of self esteem, the role of social and welfare workers is crucial to satisfactory utilization of quality antenatal care and delivery services. Early identification and referral of teenage pregnancies to higher levels of health care may ensure better care in pregnancy with remarkable reduction in perinatal and neonatal losses.

As observed in the present study, all the teenage mothers with poor perinatal outcome were poorly educated and belonged to the lowermost socioeconomic classes. Similarly, babies of teenage mothers, whose care givers declined hospitalization, belonged to mothers who were unmarried, poorly educated with unemployed spouses. This may be related to the poor finances of the spouses and the need to minimize expenses. Low socioeconomic status, and perhaps associated parental conflicts, had been identified as one of the reasons why ill children may be prematurely discharged from the hospital in this part of the world.²³ Similarly, the previous report from Ilesha identified paternity denial and inter-family conflicts as some of the social problems affecting the care of the products of school age pregnancies.¹⁴ Therefore, there may be need for legislations to ensure that health care for pregnant teenagers and their infants are provided free of charge. This may be helpful in improving the outcome of teenage pregnancies in this part of the world.

Table 2: Comparison of the socio-clinical profile of teenage mothers and the controls

Parameters	Cases (n=25)	Controls (n=50)	Statistics
<i>Education</i>			
Junior secondary or less	11 (44.0)	10 (20.0)	
Senior secondary or more	14 (56.0)	40.0 (80.0)	$\chi^2 = 4.76; p = 0.029$
<i>Parity</i>			
0	24 (96.0)	20 (40.0)	
> 1	1 (4.0)	30 (60.0)	$\chi^2 = 21.55; p < 0.001$
<i>Booking status</i>			
Booked	6 (24.0)	32 (64.0)	
Unbooked	19 (76.0)	18 (36.0)	$\chi^2 = 10.66; p = 0.001$
<i>Morbidities*</i>			
Present	10 (40.0)	6 (12.0)	
Absent	15 (60.0)	44 (88.0)	$\chi^2 = 7.78; p = 0.005$
<i>Obstetric complications**</i>			
Present	22 (88.0)	32 (64.0)	
Absent	3 (12.0)	18 (36.0)	$\chi^2 = 4.76; p = 0.029$
<i>Gestational age (weeks)</i>			
< 37 weeks	11 (44.0)	7 (14.0)	
> 37 weeks	14 (56.0)	43 (86.0)	$\chi^2 = 8.22; p = 0.004$
<i>Age of spouse (years)</i>			
20-24	18 (72.0)	4 (8.0)	
> 25	7 (28.0)	46 (92.0)	$\chi^2 = 32.93; p < 0.001$
<i>Occupation of spouse</i>			
Professionals/ Skilled	6 (24.0)	25 (50.0)	
Unskilled/ Unemployed	19 (76.0)	25 (50.0)	$\chi^2 = 4.64; p = 0.003$
<i>Socioeconomic classes</i>			
I – III	3 (12.0)	19 (38.0)	
IV – V	22 (88.0)	31 (62.0)	$\chi^2 = 5.43; p = 0.02$

*Morbidities such as severe anaemia, hypertensive diseases, toxemia of pregnancy and eclampsia

**Obstetric complications such as obstructed labour, cord prolapse, shoulder dystocia, antepartum haemorrhage, malpresentations, chorioamnionitis and uterine rupture.

Outcome of pregnancies

One teenage mother and two of the older women had a set of twin each. Thus, there were 26 babies in the case group and 52 babies in the control group. The mean estimated gestational age (EGA) of the cases was significantly less than the mean EGA of the controls: 36.7 ± 3.2 weeks Vs 38.5 ± 2.4 weeks; $t = 2.73, p = 0.008$. The cases had 22 (84.6%) live births and 4 (15.4%) stillbirths while the controls had 49 (94.2%) live births and 3 (5.8%) stillbirths. The cases had a higher rate of stillbirth compared with the controls but the difference was not statistically significant ($\chi^2 = 1.96; p = 0.161$).

The mean birth weight of the infants of the cases was 2.4 ± 0.9 kg compared with 2.9 ± 0.7 kg for the infants of the controls ($t = 2.70, p = 0.009$). A significantly higher proportion of the infants of the cases had low birth weight compared with the infants of the controls (14/26

(53.8%) Vs 10/52 (19.2%); $\chi^2 = 9.75; p = 0.002$). Similarly, a significantly higher proportion of the infants of the cases were small for gestational age (SGA) compared with the infants of the controls (10/26 (38.5%) Vs 8/52 (15.4%); $\chi^2 = 5.20; p = 0.023$). Apgar scores less than 7 at 1 minute was recorded among 63.6% (14/22) of the babies of the cases compared with 16.3% (8/49) of the babies of the controls ($\chi^2 = 15.89; p = 0.0006$).

Hospitalization and its outcome

Hospitalization was significantly more frequent among the infants of the cases compared with the infants of the controls {8/22 (36.4%) Vs 6/49 (12.2%); $\chi^2 = 5.58; p = 0.018$ }. In the case group, the indications for hospitalization included prematurity with asphyxia (4; 50%), prematurity with sepsis (1; 12.5%) asphyxia only (2; 25.0%) and prematurity only (1; 12.5%). Of these eight infants recommended for hospitalization, three (37.5%) declined hospitalization for reasons of financial constraints. These three infants belonged to mothers who were unmarried, had only primary education and whose spouses were unemployed. Two of the five hospitalized babies (40.0%) died within 24 hours of hospitalization from prematurity coexisting with asphyxia.

For the control group, the indications for hospitalization included prematurity (2; 33.3%), asphyxia (2; 33.3%), suspected cyanotic congenital heart disease (1; 16.7%) and sepsis only (1; 16.7%). Of these six infants recommended for hospitalization, none declined hospitalization but one (16.7%) died from suspected cyanotic congested heart disease within an hour of hospitalization. The neonatal mortality rate for the cases was 2/22 (9.1%) compared with 1/49 (2.0%) for the controls but the difference lacked statistical significance (χ^2 with Yate's correction = 0.515, $p = 0.473$).

Overall, poor perinatal outcome was more frequent among the cases (6/25; 24.0%) compared to the controls (4/50; 8.0%) but without statistically significant difference ($\chi^2 = 3.69; p = 0.055$). All the cases with poor perinatal outcome compared with 84.2% of the cases with good perinatal outcome belonged to classes IV and V (Fishers $p = 0.55$). Similarly, all the cases with poor perinatal outcome had less than senior secondary education while 12/19 (63.2%) of those with good perinatal outcome had at least senior secondary education (Fishers $p = 0.014$).

Discussion

There have been growing concerns about teenage pregnancy in most parts of the developed world. Incidence rates of 43.7/1000 and 83.6/1000 have been reported in Australia and USA.¹ In contrast, the incidence may be as high as 143/1000 in parts of Africa.¹⁰ This may not be surprising since the factors identified to encourage teenage pregnancies are more rampant in the developing world. Some of these factors include high level of pov-

Efforts to reduce the frequency of teenage pregnancy are most desirable. At-risk groups should be identified by school teachers and social support groups and appropriate interventions should be applied. The interventions may include financial empowerment, vocational training and psychological supports, adoption of socio-cultural norms aimed at reducing premature exploration of sexuality and improved knowledge and access to safe contraception. Such interventions have been shown to reduce the risk of teenage pregnancies.¹⁶

Authors' contribution

TAO conceived and designed the study, analyzed the data and drafted the manuscript. VAA contributed to the conception and design of the study. All the authors contributed substantially to the intellectual contents of the manuscript.

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Conclusion

The poorer perinatal and neonatal outcome of teenage pregnancies remains a challenge to health providers in the developing world. Socio-economic factors are directly or indirectly related to these poor outcomes. Focused interventional programmes as well as improved quality and accessibility of health services are most desirable in curbing the menace of foetal and neonatal losses associated with teenage pregnancy.

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