

*Short Communication*

# Education, poor antenatal care coverage and teenage pregnancy at Kassala Hospital, Eastern Sudan

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The present study was conducted at Kassala hospital in eastern Sudan over six month's duration (April to October, 2009) to determine antenatal care coverage, risk of anemia, obstructed labor, preterm birth and low birth weight among teenage primiparous women (<20 years) with singleton deliveries compared with the similar group of women aged 20 to 35 years. All primiparous women who delivered single babies were invited to participate in the study. Among 2115 primiparous deliveries, there were 321 teenagers (152 per 1000 deliveries). In comparison with older women, teenagers received poor antenatal care, were more likely to lack secondary education, at risk of preterm delivery and to develop obstructed labor ( $P$  value = 0.00, 0.00, 0.03 and 0.00 respectively). Health education and concept of contraception might reduce this high incidence of early motherhood and its consequences.

**Key words:** Education, antenatal care, pregnancy, teenage, Sudan.

## INTRODUCTION

It has been estimated that, each year, 13 million neonates are born to women under the age of 20 years; 90% in the developing countries (Mayor, 2004) where poverty and lack of educations are the major risk factors for early motherhood (Allen et al., 2007). Pregnancy and childbirth in teenage women carries additional medical concern and World Health Organization estimated that risk of death following pregnancy is twice as great for women between 15 and 19 years than for those between 20 and 24 years (WHO, 2004). While teenage pregnancy is a cultural and traditional issue in the developing countries, most of these pregnancies appear unplanned in developed world (WHO, 2004; Slap et al., 2003). It is associated with increased risk of poor perinatal outcomes like prematurity, low birth weigh and infant death in addition to inadequate maternal nutrition, poor antenatal care, preeclamsia, obstructed labor and obstetric fistula (Sharma et al., 2001; Ziadeh et al., 2001).

High incidence of obstetric complications and maternal mortality has recently been observed in Kassala,

eastern Sudan (Ali et al., 2011). Furthermore, in Kassala, a high incidence of teenage pregnancy is expected where there was non-use/under use of any method of contraception by the populations in this area (Ali et al., 2011). The aim of the present study is to determine the antenatal care coverage among teenage women, perinatal outcomes (in term of prematurity and low birth weight) and maternal outcomes (in term of anemia and obstructed labor) at Kassala maternity hospital, eastern Sudan.

## MATERIALS AND METHODS

The study was conducted in the labor ward of Kassala Maternity Hospital in eastern Sudan, from April to October 2009, to determine antenatal care coverage, risk of anemia, obstructed labor, preterm birth and low birth weight among teenage primiparous women with singleton deliveries compared with the similar group of women aged 20 to 35 years.

Kassala is located in eastern Sudan, 600 km from Khartoum; it is 42,282 km<sup>2</sup>, with a population of 1.8 million people. Of these, 440,491 women are of reproductive age. Kassala Hospital provides tertiary care for women who receive antenatal care at the hospital, as well as for referrals from other clinics and hospitals, and for women who live close to the hospital facility. All women with risk factors or obstetric complications are referred to the hospital.

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However, the referral criteria are not strictly adhered to and many patients without any significant complications deliver at the hospital.

The study population was categorized into two age groups: teenagers (<20 year) and those between 20 to 35 years. Maternal age was defined as age completed in year at time of delivery. After taking an informed consent, basic socio-demographic data such as age, educational level and antenatal attendance, data concerning characteristic of labor and mode of delivery, perinatal and maternal outcomes were gathered using standardized questionnaires from all women. The gestational age was calculated from the last menstrual period or ultrasound and clinical estimation if last period was not known. Maternal haemoglobin was measured using a HemoCue haemoglobinometer (HemoCue AB, Angelholm, Sweden) and neonates were weighed immediately to nearest 50 g. In the study, we compared the education, antenatal care coverage (minimum four visits), obstructed labor (based on the clinical finding defined as failure of descent of the fetus further down the birth canal, for mechanical reasons, despite good uterine contractions), mode of delivery, preterm birth (less than 37 weeks), low birth weight (less than 2.5 kg) and maternal anemia (less than 11 g/dl) between the two groups.

Data were entered into a computer database and were double-checked before analysis using SPSS version 13.0 (SPSS, Chicago, IL, USA). Analysis of variance was used to compare means and  $\chi^2$  test was used for categorical variables and  $P < 0.05$  was considered significant.

## Ethics

The study received the ethical clearance from the Health Research Board at Ministry of Health, Kassala, eastern Sudan.

## RESULTS

Among 2115 deliveries, 599 were by primiparous and none of them refused to participate in the study, 321 (53.6%) out of these 599 were younger than 20 years and 278 (46.4%) were between 20 and 35 years old, yielding an incidence rate of 152 teenagers per 1000 deliveries. Only 34 (10.6%) women were  $\leq 16$  years while 287 (89.4%) were 17 to 19 years old among the teenagers' mothers.

While there was no significant difference in mean of the gestational age between the study groups, higher proportion of the young women had less than secondary level education and poor antenatal care coverage (Tables 1 and 2). There was no significant difference in the proportions of anemic patients and women gave low birth weight however young women were more likely to developed obstructed labor (Tables 1 and 2).

Teenage women were at risk of preterm delivery and there were no statistical difference in mode of delivery between the study groups (Table 2).

## DISCUSSION

The main findings of the current study were a high incidence rate of teenage pregnancy; younger women received poor antenatal care, more likely to lack

secondary education, at risk of preterm delivery and to develop obstructed labor. There was a high incidence rate of teenage pregnancy in Sudan as shown in this study (152 per 1000 births) as well as other observation in western Sudan which showed a high pregnancy rate with first pregnancy at age  $18 \pm 0.08$  years (Kim et al., 2007). Sudan is characterized by early marriage which is a cultural and desirable trait that shifts the girls away from education; furthermore, education is an accurate factor which affects the woman's ability to make her own decision regarding the reproductive health like early motherhood thus this might explain the association between teenage pregnancy and education (UNICEF, 2006). Teenage pregnancy is a common public health issue and is largely preventable (Langille, 2007). The association between teenager pregnancy and education may be attributable to the specific characteristics of the younger women being coming from low income households (Langille, 2007). In the current study, there was significant association between teenaged women, lack of antenatal care services and education. Recently, we observed that poor antenatal care, and less than secondary education, was the predictors for maternal mortality in Darfur, Sudan (Haggaz et al., 2008). Furthermore, in Khartoum hospital, Sudan Hassan and his colleagues documented that both maternal education and antenatal care inadequacy were associated with poor perinatal outcomes (Hassan et al., 2009).

Unlike other reports from other setting in Sudan, in this study, younger women were not at risk of anemia and this might be explained by the high prevalence rate of anemia in this area of Sudan, irrespective of the women age and parity (Adam et al., 2008, 2009). Obstructed labour is a common complication in this hospital and it is associated with high level of maternal and perinatal mortality (Ali et al., 2010). The present study showed that the teen women were at increased risk to develop obstructed labor. The possible explanation is the underdevelopment of the pelvis combined with poor nutrition in adolescent mothers (Mukhopadhyay et al., 2010).

Recent study shows that even healthy baby born to an adolescent woman is at increased risk to develop post-neonatal deaths (Phipps et al., 2002). Unlike the result from other African countries, for example Nigeria, in this study, the perinatal outcome in terms of low birth weight among younger women are comparable with the other age group; but in line with the same finding from Nigeria, higher proportion of preterm deliveries was observed among teenagers (Kurth et al., 2010).

## Conclusion

In conclusion, there was a high incidence rate of teenage pregnancy in eastern Sudan; in comparison with older women, teenagers received poor antenatal care, were

**Table 1.** Relation of the maternal age to sociodemographic characteristics and anemia.

Variable	Maternal age group Teenager( <20yr) n(321)	20-35yr n(278)	P
Education			
< Secondary	242 (75.4)	138 (49.6)	0.000
No antenatal care	241 (75.1)	22(7.9)	0.000
Hemoglobin (g/dl)	11.1± 0.5	10.9± 0.6	0.000
Anemia (Hb< 11 g/dl)	35 (10.9)	32 (11.5)	0.4

Values are given as number (percentage) or Mean ± SD.

**Table 2.** Relation of the maternal age to maternal and perinatal outcomes.

Variable	Maternal age group Teenager (<20yr) n(321)	20-35 yrs n(278)	P
Preterm delivery	14 (4.4)	4 (1.4)	0.03
Vaginal delivery	251 (78.2)	224(80.6)	0.2
Obstructed labor	29 (9)	2 (0.7)	0.000
Gestational age	38.5±2.5	38.4± 1.1	0.4
Neonatal weight	3.2± 0.5	3.3± 0.4	0.5
LBW, <2.5 kg	14 (4.4)	9 (3.2)	0.3

Values are given as number (percentage) or Mean ± SD.

more likely to lack secondary education, were at risk of preterm delivery and to develop obstructed labor. This finding provides strong evidence that teenager pregnancy constitutes an independent risk factor for preterm delivery in Africa and highlights the public health problem of early motherhood. Health education and concept of contraception might reduce this high incidence of early motherhood and its consequences.

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