

## Birth Outcomes and Successive Pregnancy Rates in Adolescents Attending a Specialised Antenatal Clinic

### Dear Editor,

Adolescent pregnancies are associated with negative health and social consequences. Pregnant adolescents are prone to poorer birth outcomes that are attributed to biological and socioeconomic differences.<sup>1,2</sup> A study in New Jersey<sup>3</sup> reported 1 in 5 repeat pregnancies while still in their adolescence. Short pregnancy intervals drain the already limited resources that adolescents have, and their children, in turn, could be at risk of adolescent pregnancies themselves.

Azevado et al's systematic review<sup>4</sup> reported improvements when there was adequate prenatal care. Age-specific antenatal clinics have been described in the literature. A study involving 731 patients by Quinlivan et al<sup>5</sup> comparing teenage antenatal clinics versus general clinics showed a reduction in preterm births and an increase in contraception uptake when adolescents visited the former. Such clinics provide multidisciplinary care and screening for infectious and social pathologies. However, these adolescents may constitute a self-selected group with greater empowerment while others may not have access to these clinics due to emotional or financial insecurities.

This study retrospectively compared pregnancy complications, outcomes, contraception uptake and repeat pregnancy rates in adolescents with good attendance at a dedicated teenage pregnancy clinic in our centre versus those with poorer attendance (worse results were expected).

### Materials and Methods

The specialised Clinic for Adolescent Pregnancy (CARE) was established in our centre in 2008. It has a multidisciplinary team of doctors, nurses, counsellors and social workers working with community agencies. Unmarried adolescents are booked with the clinic and the cutoff age is 21 at the expected date of delivery. Screening for chlamydia and gonorrhoea is emphasised. A formal psychosocial assessment of the involvement of the putative father and family, plans for marriage, homelessness, domestic violence, education and financial plans are conducted by medical social workers. High risk cases are followed-up by a mental wellness team including nurses, psychologists and psychiatrists. Designated trained nurse counsellors reinforce contraception use postpartum at follow-up. The clinic runs twice weekly at different time sessions to

allow scheduling flexibility. Monthly multidisciplinary meetings are conducted to discuss the management of adolescents with more complex social or medical issues.

Cases booked with CARE from 2008 to 2012 and delivered before the end of 2013 were reviewed. The study was extended for 2 years to follow-up on successive pregnancies. Access to prenatal care was categorised according to the Kessner Index criteria of the National Institute of Medicine,<sup>6</sup> based on booking gestation and number of antenatal visits, adjusted for gestation length of that pregnancy. Good attendance was considered met if the booking had occurred before 28 weeks' gestation, with the number of prenatal visits within an adequate range as per the Kessner Index.

Demographic data for maternal profiling, pregnancy complications and outcomes, postpartum contraception use and successive pregnancies in the subsequent 1 to 2 years were analysed. Level of social support was measured using the newborn's discharge destination as a surrogate marker. Assessment and provisions were made to safeguard the interests of the newborn before discharge. The ability to discharge a newborn back to the care of the adolescent mother reflected at least the lack of psychosocial stressors such as homelessness, drug abuse and domestic violence. On the other hand, giving up for adoption reflected deficiencies in social structural supports.

Statistical significance was calculated by categorical chi-square test, Fisher's exact test and Student t-test analysis, where relevant, on SPSS Statistics 20. Difference was considered significant if *P* value was <0.05.

### Results

A total of 630 cases were booked with CARE; 143 records were unavailable for review, 12 cases were lost to follow-up, 3 had terminated their pregnancies and 2 cases miscarried early after booking. The remaining 470 cases (74.6%) were reviewed.

Two hundred and sixty-five cases (56.4%) had adequate attendance while 205 cases (43.6%) had poor attendance. As shown in Table 1, poor attendees were younger ( $17.7 \pm 1.5$  vs  $18.1 \pm 1.4$ ,  $P < 0.001$ ). Given that Malays in Singapore constitute 13.8% of the population,<sup>7</sup> the Malay ethnic group was disproportionately larger (63.4%) in our study especially among the poor attendees (76.1%,  $P < 0.001$ ).

Table 1. Maternal Profiles among Pregnant Adolescents Attending CARE

	At Least Minimal Standard of Care Obtained n (%)	Poor Access of Care n (%)	Overall n (%)	P Values*
Overall	265	205	470	
Age	18.1 ± 1.4	17.7 ± 1.5	17.9 ± 1.5	<0.001
Age below 16	12 (4.5)	15 (7.3)	27 (5.7)	
Race				
Chinese	95 (35.8)	36 (17.6)	131 (27.9)	<0.001
Malay	142 (53.6)	156 (76.1)	298 (63.4)	
Others	28 (10.6)	13 (6.3)	41 (8.7)	
Parity				
1	260 (98.1)	199 (97.0)	459 (97.7)	
2	5 (1.9)	6 (2.9)	11 (2.3)	
Substance abuse				
Alcohol	7 (5.7)	2 (1.0)	9 (1.9)	
Continued cigarette smoking	30 (11.3)	24 (11.7)	54 (11.5)	
Stopped smoking in pregnancy	12 (4.5)	7 (3.4)	19 (4.0)	
Recreational drugs	0 (0.0)	0 (0.0)	0 (0.0)	
Remained single	127 (46.8)	119 (58.0)	246 (52.3)	0.029
Newborn's discharge destination				
Self	253 (95.5)	187 (91.2)	440 (93.6)	0.041
Adoption	10 (3.8)	18 (8.7)	31 (6.6)	

CARE: Clinic for Adolescent Pregnancy

\*Are indicated where significant.

Notably, more poor attendees remained single throughout the pregnancy (58.0% vs 46.8%,  $P = 0.029$ ). A larger proportion of newborns required adoption among the poor attendees (8.7% vs 3.8%,  $P = 0.041$ ).

Overall, 24.0% of adolescent pregnancies were complicated by anaemia. As shown in Table 2, this was significantly lower among the adequate attendees (20.4% vs 28.3%,  $P = 0.046$ ). A total of 91.7% of adolescents received screening for chlamydia and gonorrhoea infections.

Table 2. Pregnancy Complications and Birth Outcomes among Pregnant Adolescents Attending CARE

	At Least Minimal Standard of Care Obtained n (%)	Poor Access of Care n (%)	Overall n (%)	P Values*
Overall	265	205	470	
Hypertension	4 (1.5)	7 (3.4)	11 (2.3)	
Diabetes	3 (1.1)	3 (1.5)	6 (1.3)	
Clinical depression	0 (0.0)	0 (0.0)	0 (0.0)	
Anaemia	54 (20.4)	58 (28.3)	112 (24.0)	0.046
Infections				
Not screened	14 (5.3)	25 (12.2)	39 (8.3)	0.002
Screened	251 (94.7)	180 (87.8)	431 (91.7)	
Chlamydia	67 (26.7)	44 (24.4)	111 (23.6)	
Gonorrhoea	6 (2.4)	3 (1.7)	9 (1.9)	
Intrauterine growth restriction	12 (4.5)	6 (2.9)	18 (3.8)	
Fetal anomalies (major and minor)	12 (4.5)	7 (3.4)	19 (4.0)	
Caesarean sections	15 (5.7)	14 (6.8)	29 (6.2)	
Preterm births	14 (5.3)	38 (18.5)	52 (11.1)	<0.001
Preterm births less than 34 weeks	2 (0.8)	6 (2.9)	8 (1.7)	
Mean birth weight	2861 ± 478	2922 ± 400	2895 ± 437	
Admission to high-level neonatal unit (SCN/NICU)	33 (12.5)	25 (12.2)	58 (12.3)	
Stillbirth/perinatal death	2 (0.8)	0 (0.0)	2 (0.4)	

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The number of poor attendees who were not screened for chlamydia and gonorrhoea infections was twice that of adequate attendees (12.2% vs 5.3%,  $P = 0.002$ ). The incidence of chlamydia (26.7% vs 24.4%) and gonorrhoea infections (2.4% vs 1.7%) were similar in both groups.

Significantly, 18.5% of births among the poor attendees were preterm compared to 5.3% ( $P < 0.001$ ). However, the percentage of severely preterm births, mean birth weights and admissions to high level neonatal units were comparable.

Table 3. Postpartum Contraception and Successive Pregnancies among Pregnant Adolescents Attending CARE

	At Least Minimal Standard of Care Obtained n (%)	Poor Access of Care n (%)	Overall n (%)	<i>P</i> Values*
Overall	265	205	470	
Defaulted postpartum review	119 (44.9)	101 (49.3)	220 (46.8)	
Known postpartum contraception	30 (20.5)	15 (14.4)	45 (18.0)	0.056
Subsequent pregnancies in 1 year	47 (17.7)	43 (21.0)	90 (19.1)	0.364
Subsequent pregnancies in 2 years	116 (43.8)	89 (43.4)	205 (43.6)	0.62
Subsequent pregnancy still within adolescence	90 (34.0)	64 (31.2)	154 (32.8)	

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As shown in Table 3, almost half defaulted on postnatal follow-up. Overall postpartum contraceptive use was low (20.5% vs 14.4%,  $P = 0.056$ ), and rate of successive pregnancies were high (17.7% vs 21.0% in 1 year,  $P = 0.364$ ; 43.8% vs 43.4% in 2 years,  $P = 0.62$ ); 75.1% of these pregnancies occurred while still in adolescence.

## Discussion

Our study highlighted a subgroup who were younger and predominantly of Malay ethnicity with poorer access to care. Anaemia and preterm births were more prevalent in this subgroup. The tendency to remain single also continued to put them at risk of further unintended pregnancies and sexually transmitted infections (STIs). Efforts are required to empower them to seek early triage care and to comply with interventions such as consumption of iron, antibiotics and usage of birth control.

Innovative ways to improve outreach could be explored. Group adolescent prenatal care was associated with higher satisfaction, less defaulted appointments, fewer emergency department visits, increased initiation of breastfeeding and improved perinatal outcomes.<sup>8-10</sup> The efficacy of such a method in our reserved Asian culture remains to be evaluated.

School-based clinics may be effective in promoting sexual and reproductive health. A Canadian study<sup>11</sup> showed a 1.5 times increase in relative rate of pregnancy and 2 times increase in relative rate of STI in adolescents from schools without such clinics. A study by National University Hospital, Singapore<sup>12</sup> also highlighted the need for school-based sexual education programmes and suggested emphasising abstinence in Malay adolescents if contraception contradicts religious beliefs.

Despite a dedicated counselling service, contraception uptake was low in our study. Contraception counselling in the third trimester or postpartum may leave insufficient time for due consideration.<sup>13</sup> Adolescent mothers discharged without initiating contraception have a significantly increased risk of repeat pregnancy.<sup>14</sup> Hence, contraception counselling could be initiated earlier and administered prior to discharge. In particular, long-acting reversible contraception (LARC) should be emphasised. The Contraceptive CHOICE study found that these methods resulted in fewer unwanted pregnancies.<sup>15</sup> A study on the use of motivational interviewing within an adolescent-focused prenatal care environment showed a 3 times higher rate of LARC uptake.<sup>16</sup>

## Conclusion

Healthcare resources should be dedicated to improving accessibility and acceptability of care for the pregnant adolescent. Strategies such as group care and school-based clinics could be explored. Attendance at CARE was associated with less preterm births and anaemia, but was unable to prevent quick successive pregnancies. An early discussion on contraception, emphasising the use of LARC through motivational interviewing and initiating contraception before hospital discharge could be helpful.

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