

Maternal and Neonatal Outcomes under the Comprehensive Child Development Service at Princess Margaret Hospital: a One-year Experience

Lai-Fong HO RN, RM, MSc

Mei-Fung CHAN RN, RM, BSc

Hoi-Ying LAU RN, RM, MSc

Lai-Fun TSE RN, RM, BSc

Yan-Yan AU RN, RM, BSc

Judy WY NG RN, RM, MSSc, MHSc(Edu)

Department of Obstetrics and Gynaecology, Princess Margaret Hospital, Laichikok, Hong Kong

Objective: To review the demographic characteristics of the women under the care of the Comprehensive Child Development Service (CCDS) and their neonatal outcomes.

Methods: Patient records under the care of the CCDS team in 2014 in a regional hospital in Hong Kong were retrieved for data analysis.

Results: Of the 275 women included in the final cohort, 21 (7.6%) were teenagers, 86 (31.3%) were a substance abuser, and 168 (61.1%) had mental health problems. With regard to the neonatal outcome, 14.2% were delivered preterm and 44.0% were admitted to the neonatal unit. Of the babies admitted to neonatal unit, 33.9% were due to neonatal drug withdrawal syndrome. Ketamine (50.0%) and amphetamine (44.2%) were the illicit drugs most commonly used by the mother, followed by cocaine (26.7%), heroin (17.4%), and ecstasy (17.4%); 34.9% of these women did not avoid the substance during pregnancy. When compared with the overall statistics in the hospital in 2014, the women in this study had more preterm birth (14.2% vs. 7.2%), more operative deliveries (26.8% vs. 21.1%), and more babies who required special care (44.0% vs. 31.1%).

Conclusion: Women with active substance abuse disorders are at risk for unplanned pregnancy. Effective contraceptive methods should be emphasised to this group of women after delivery. It is also crucial to appreciate the impact of the adverse consequences of substance abuse during pregnancy.

Hong Kong J Gynaecol Obstet Midwifery 2017; 17(2):113-6

Keywords: Drug users; Infant, newborn; Mental disorders; Pregnancy complications; Substance-related disorders

Introduction

Many studies have shown that mental health problems, substance abuse, and teenage pregnancies are associated with poor outcomes for fetal and child development^{1,2}. The Hong Kong Hospital Authority introduced the Comprehensive Child Development Service (CCDS) in 2005 to improve the health outcomes of these pregnant women and their babies. CCDS is a government-funded community-based programme that aims to ensure early identification of the various needs of children (0-5 years old) and their family. Through collaboration and communication of different health care disciplines, timely support can be provided to families with special needs.

The scope of the CCDS consists of the following four main components: (1) identification and holistic management of at-risk pregnant women; (2) identification and management of mothers with postnatal depression; (3) identification and management of families with

psychosocial needs; and (4) identification and management of toddlers with physical, developmental, and behavioural problems. At the hospital level, the clinic serves as a platform for antenatal and postnatal screening³. The at-risk groups that include teenage pregnant women, women with mental health problems, and women with substance abuse can be identified and monitored by the CCDS team.

Pre-existing mental illness, history of significant life events, experience of postnatal depression, or issues relating to grief and loss may all place women at risk of antenatal depression and/or postnatal depression⁴. Maternal mental health has become an area of increasing concern for researchers, clinicians, and public policymakers since

Correspondence to: Dr Lai-fong Ho

Email: hlf208@ha.org.hk

evidence has been accumulating that the consequences of perinatal mental illness are not limited to the suffering of the affected women, but extend to the mother-infant relationship and eventually the developing child⁵. The process of childbirth involves many psychological and emotional changes that may cause pre-existing mental health problems to relapse or recur, including psychotic symptoms⁶.

Another high-risk group under the CCDS team is women with substance abuse. Drug misuse and dependence during pregnancy is associated with a wide variety of adverse maternal and child outcomes^{7,8}. Neonatal complications include microcephaly, intrauterine growth retardation, opioid withdrawal syndrome, postnatal growth deficiency, neurobehavioural problems, and sudden infant death^{9,10}. The adverse obstetric outcomes are mainly attributable to poor nutrition as money is spent on purchase of the illicit drug / substance, loss of appetite due to the side-effects of the illicit drug / substance or smoking, and a poor social relationship with family members with consequent lack of social support. Significant risk may occur with drug-induced psychosis, paranoid schizophrenia, auditory or sensory hallucination, and suicidal ideation. It creates not only a substantial impact on perinatal outcomes, but also a long-term ill effect on the health of women and their children¹¹.

In relation to teenage pregnancy, many studies have shown an increased risk of adverse birth outcomes, such as preterm delivery¹², increased risk of congenital anomalies¹³, and neonatal death. In the long term, babies are more likely to be admitted to hospital as a result of accident or gastroenteritis^{14,15}. The additional measures undertaken during antenatal visits by pregnant teenagers should include discussion of future childcare plans, improving knowledge about parenting, introducing contraception methods as early as possible in antenatal care, and a review of legal issues if the mother is aged under 16 years.

Local experience of the services provided to these women under the care of the CCDS team has not been reported. As we started referring pregnant women who were habitual / occasional / potential psychotic substance abusers to the CCDS team in 2013 after getting their verbal consent, we reviewed the demographic characteristics of these women under the care of the CCDS team in 2014 and their neonatal outcomes.

Methods

This was a retrospective hospital-based study of

women who were Hong Kong residents, delivered at our hospital, and under the care of the CCDS team in 2014. Data were collected from the initial assessment form completed at the first interview and the postnatal assessment form completed after delivery. Analyses were performed using the SPSS (Windows version 16.0; SPSS Inc, Chicago [IL], US). Baseline descriptive statistics were used to present data. Chi-square test and one-way analysis of variance were adopted to assess the relationship between variables.

Results

In the database of 375 women, 100 were excluded (68 did not require follow-up, 3 had termination of pregnancy, and 29 delivered in other hospitals).

Patients were classified into three groups (teenage problem, substance abuse problem, and mental health problem) based on their major problem that needed to be addressed first. For instance, if a teenage woman presented with a history of substance abuse within a year before the expected date of confinement, then she would be classified in the substance abuse group.

Of the 275 women included in the final cohort, 21 (7.6%) were a teenager, 86 (31.3%) engaged in substance abuse, and 168 (61.1%) had mental health problems. The demographic data for each group are shown in Table 1.

Neonatal outcomes are shown in Table 2. 14.2% (39/275) were delivered preterm and 44.0% (121/275) were admitted to the special care baby unit (SCBU) or neonatal intensive care unit (NICU). Of the admissions to SCBU, 33.9% (41/121) were due to neonatal drug withdrawal syndrome. Compared with figures in the Annual Report of 2014¹⁶, our study has more preterm births (14.2% vs. 7.2%), more operative deliveries (26.9% vs. 21.1%), and more babies who required special care (44.0% vs. 31.1%).

Of 86 women (1.8% of the 4701 women delivered in our hospital in year 2014) with substance abuse, 53 were active substance abusers and 33 had more than 1-year history of substance abuse prior to the expected date of confinement. With regard to marital status, 45 (52.3%) were single and nine (10.5%) were separated / divorced; whereas 59 (68.6%), 10 (11.6%), and 13 (15.1%) claimed to have a stable, fair, or poor relationship with their husband / partner, respectively. Of the patients, 72 (83.7%) and 34 (39.5%) had a smoking and drinking habit, respectively. In 67 (77.9%) cases, pregnancy was unplanned and 61 (70.9%) reported no previous use of contraception. For the neonatal outcome, 15 (17.4%) women delivered their baby

Table 1. Demographic data of the three groups

Demographics	No. (%) of subjects		
	Teenage (n=21)	Substance abuse (n=86)	Mental health problem (n=168)
Age-group (years)			
≤18	21 (100)	4 (4.7)	1 (0.6)
19-34	0	71 (82.6)	124 (73.8)
≥35	0	11 (12.8)	43 (25.6)
Primiparous	19 (90.5)	46 (53.5)	74 (44.0)
Marital status: single	21 (100)	45 (52.3)	24 (14.3)
Stable relationship with husband / partner	17 (81.0)	59 (68.6)	137 (81.5)
Financial problem	5 (23.8)	21 (24.4)	43 (25.6)
Smoking habit	10 (47.6)	72 (83.7)	41 (24.4)
Drinking habit	8 (38.1)	34 (39.5)	27 (16.1)
Unplanned pregnancy	17 (81.0)	67 (77.9)	98 (58.3)

Table 2. Neonatal outcome

Outcome	No. (%) of subjects or mean ± SD			p Value
	Teenage (n=21)	Substance abuse (n=86)	Mental health problem (n=168)	
Caesarean section	4 (19.0)	18 (20.9)	52 (31.0)	0.123
Admission to SCBU / NICU	6 (28.6)	58 (67.4)	57 (33.9)	<0.001
Preterm (<37 weeks)	2 (9.5)	15 (17.4)	22 (13.1)	0.504
Birth weight (g)				
<1500	2 (9.5)	2 (2.3)	10 (6.0)	0.583
1500-2499	1 (4.8)	8 (9.3)	13 (7.7)	
≥2500	18 (85.7)	76 (88.4)	145 (86.3)	
Apgar score				
At 1 min	8.73 ± 1.10	8.52 ± 1.40	8.83 ± 0.89	0.414
At 5 mins	9.73 ± 0.77	9.67 ± 0.94	9.93 ± 0.45	0.228

Abbreviations: NICU = neonatal intensive care unit; SCBU = special care baby unit; SD = standard deviation

preterm, and 18 (20.9%) had an operative delivery.

Ketamine (50.0%, 43/86) and amphetamine (44.2%, 38/86) were the most commonly used illicit drugs in this group, followed by cocaine (26.7%, 23/86), heroin (17.4%, 15/86), and ecstasy (17.4%, 15/86). Some had taken methadone, marijuana and cannabis, and 34.9% (30/86) did not stop the abuse during pregnancy. A total of 58 (67.4%) babies were transferred to the SCBU or NICU. For birth weight, 76 (88.4%) weighed more than 2500 g. Babies were being cared for by their mother in 87.8% of cases, and by relatives in 5.4%. In 6.8% of cases the baby was handed

over for foster care.

Discussion

Under CCDS, midwives play a significant role as case managers to provide in-depth assessment, health counselling, and appropriate and timely referral of the teenage mother to a psychiatric nurse or psychiatrist, medical social worker or social worker, community psychiatric nurse, detoxification institution, or non-governmental organisation. These vulnerable women also require additional antenatal care and hence a multidisciplinary approach, which consists of appropriate obstetric and

neonatal care, can reduce the rate of complications in these pregnancies and improve maternal and child outcomes¹⁵.

Women with active substance abuse disorders are at risk of unplanned pregnancy. Upon diagnosis of pregnancy, the parental role should be discussed and counselling should be offered about pregnancy options. The importance of effective contraceptive methods should be reiterated after delivery. Most women did not abstain from illicit drugs during pregnancy, and babies needed to be admitted to the SCBU as a consequence of this substance abuse or because of neonatal withdrawal syndrome. Therefore, effective counselling, referral, and intervention for this high-risk group is an important component of the CCDS programme.

Results of this study revealed that there were an increased number of babies admitted to SCBU or

NICU, this added an extra workload to the neonatal unit. Therefore, it is crucial to appreciate the impact of the adverse consequences of substance abuse in pregnancy.

This study included the data in 1 year only, which does not reflect the full extent of the problem or its impact on service requirements. Nevertheless, no evaluation has been carried out since the CCDS programme was introduced to our hospital in 2006. Continuous evaluation and quality management of the CCDS team are essential to optimise the service. Examination of maternal and neonatal outcomes over a minimum of 5-year period will provide a valid means to evaluate the quality and effectiveness of service provided, and form the basis of future improvements and direction of our CCDS and management teams.

Declaration

The authors have disclosed no conflicts of interest.

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