The effects of drug and alcohol use on child development: Age 3 preliminary results

Triple B Study

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Introduction

• There are over 295,000 births in Australia each year (ABS, 2010).

• More than half of all pregnant women report some alcohol or other drug use in pregnancy. In the 2010 NDSHS, 51% of pregnant women drank alcohol and 12% smoked tobacco during pregnancy. Six percent of pregnant women used any illicit drug during pregnancy (AIHW, 2005).

•Studies based on high-risk samples of parents diagnosed with substance use disorders demonstrated parental substance use had significant adverse impacts on infant cognitive, behavioural and emotional development (Bartu et al., 2006; Bandstra et al., 2010).

•Past research is largely limited to cross-sectional methods or high-risk samples. Less is known about the effects of low or moderate drug and alcohol use in pregnancy and the long term effects on infant development.

•This creates ongoing uncertainty about appropriate public health recommendations to women about substance use in pregnancy.

Aims

•To describe the demographic and psychosocial characteristics of a pilot cohort of pregnant women and partners recruited through low-risk antenatal clinics.

•To monitor the quantity and frequency of alcohol use in the cohort during pregnancy.

•To investigate the association between substance use in pregnancy and child development at 3 years of age.

Method

•This study is a pilot longitudinal birth cohort that began in 2008.

•68 pregnant women and their partners were recruited through low-risk antenatal clinics at Royal Prince Alfred Hospital in Sydney.

•Participants were given self complete questionnaires and interviewed during each trimester in pregnancy about demographic information, substance use, family functioning, physical health, mental health and stress.

•When children were 3 years old, mothers and fathers completed interviews and self complete surveys.

•Infant development was measured when children were 3 years old using the Bayley Scales of Infant and Toddler Development (III) in an in-person assessment. The Bayley Scales measures cognition, receptive and expressive language, fine and gross motor, socio-emotional functioning and adaptive behaviour.

• 47 families have completed the age 3 follow-up assessment to date. These results are presented here.

Results

Table 1. Demographics at baseline.

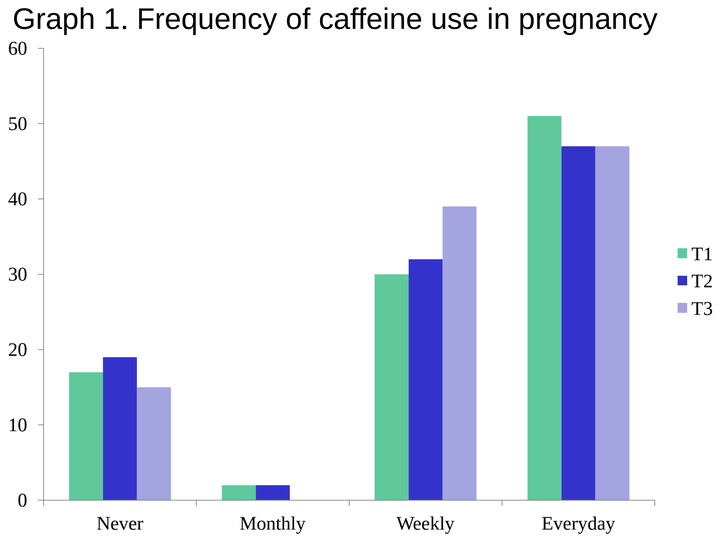
Characteristics	N=47
Mean Age	33.32
Mean Fortnightly Income (after tax)	$1598
Born in Australia	72%
Aboriginal and/or Torres Strait Islander	0
Completed Tertiary Education	98%
Employed Full-Time	62%
Married	70%
Living in Own House/Unit	57%
Current Partner is Father	92%
Have Other Children	38%
Wanted to Become Pregnant	81%

Table 2. Frequency and average quantity of substance use during pregnancy.

Substance (n=47)	Trimester 1	Trimester 2	Trimester 3
Caffeine			
Quantity (mean)	92 mg	92 mg	89 mg
Total Use	83%	81%	85%
Alcohol			
Quantity (mean)	1.7 SD	1.4 SD	1.4 SD
Total Use	43%	51%	49%
Tobacco			
Quantity (mean)	4.8 cigarettes	5 cigarettes	6 cigarettes
Total Use	9%	4%	4%

SD = Standard Drinks. 1.5 SD = 1 glass of wine.
Mg= milligrams. 110mg=1 espresso coffee.

Graph 1. Frequency of caffeine use in pregnancy



Graph 2. Frequency of alcohol use in pregnancy

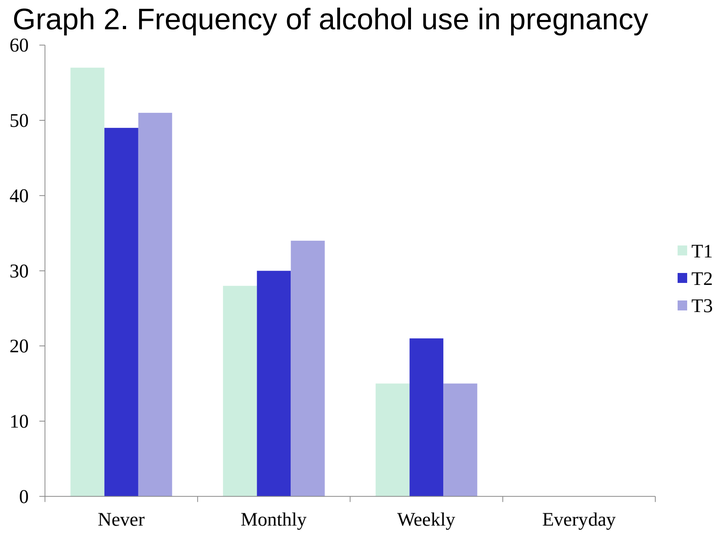


Table 3. Anova results on the relationship between maternal substance use during pregnancy and child development at age 3.

Development Scale	Caffeine (F statistic)	Alcohol (F statistic)
Cognitive	.05	.01
Receptive Language	.09	.00
Expressive Language	.21	.03
Fine motor	.06	.01
Gross Motor	.88	1.17

There was not enough tobacco use for the analysis
*significant at the 0.05 level (2 tailed)

Discussion

•85% of women consumed caffeine during pregnancy. The average amount of caffeine consumed was 92 mg, which is less than a cup of espresso coffee per occasion. Most women consumed caffeine everyday.

•51% of women reported alcohol use during pregnancy. The quantity of use is low; the mean number of standard drinks per drinking occasion was 1.7, which is the equivalent to a glass of wine. Most women consumed alcohol monthly.

•Tobacco consumption was low; 9% of the sample used tobacco during pregnancy.

•No other substances were used during pregnancy.

•Maternal caffeine and alcohol consumption during pregnancy was not significantly related to child development at age 3 on the cognition, language and motor scales.

•Results from this sample do not support the relationship between substance use in pregnancy and development.

•However these preliminary analyses need to be interpreted with caution given the small sample.

•Future analyses need to consider quantity and frequency of substance use when investigating the relationship between substance use and child development especially considering the low levels of use in this sample.

Conclusion

•This pilot study provides the groundwork for the first large-scale Australian cohort study to comprehensively monitor alcohol use patterns in pregnant women.

• The larger study will lead to improved knowledge of the effects of low to moderate alcohol, tobacco and other substance use, which are common in Australia.

•These preliminary results demonstrate the need for further research using larger samples to investigate the relationship between maternal substance use and child development in preschool age children.

•The age three cohort is currently ongoing and an in-depth analyses will be conducted once the cohort has been completed.

• Improved understanding of the effects of parental substance use on child development will direct prevention, educational interventions and health policy.

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