

Pacific Health Review

Making Education Easy

Issue 17 - 2013

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Abbreviations used in this issue

- BMI** = body mass index
LBW = low birth weight
LMC = Lead Maternity Carer
PIFS = Pacific Islands Families Study
SGA = small for gestational age
SPTB = spontaneous preterm birth
STI = sexually transmitted infection
TPH = Traditional Pacific Healer



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Disclaimer: This publication is not intended as a replacement for regular medical education but to assist in the process. The reviews are a summarised interpretation of the published study and reflect the opinion of the writer rather than those of the research group or scientific journal. It is suggested readers review the full trial data before forming a final conclusion on its merits.

Kia orana, Fakalofa lahi atu, Talofa lava, Malo e lelei, Bula vinaka, Taloha ni, Kia ora, Greetings.

Welcome to Pacific Health Review.

The focus of this issue is maternal and antenatal care.

One of the significant achievements of health care in high-income countries is the improvement of reproductive, maternal and child health outcomes. In high-income countries, it is now very uncommon for stillbirths to occur at term, or in the intrapartum period. In New Zealand, the major factors associated with fetal and neonatal mortality are extreme prematurity or congenital anomalies.

However, the pattern for Pacific babies is more like that seen in low-income countries with higher rates of late preterm, term or intrapartum deaths. A recent review of maternity care in Counties Manukau DHB, where an estimated half of the 8,500 births per year are Māori, Pacific or low-income, confirmed that Pacific women and those living in highest deprivation quintiles were more likely to suffer a perinatal death than similar women living elsewhere in New Zealand.

We have included in this issue of Pacific Health Review recent papers relevant to improving the quality of care.

The first paper reports outcomes from the multinational SCOPE (Screening for Pregnancy Endpoints) study, a prospective investigation involving 'healthy' nulliparous women that primarily sought to identify reliable risk factors for spontaneous preterm birth (birth <37 weeks of gestation) with intact membranes (SPTB-IM) and SPTB after pre-labour rupture of the membranes (SPTB-PPROM) in 'healthy' nulliparous pregnant women. The results demonstrate that different clinical risk factors are involved in SPTB-IM and SPTB-PPROM, which means that different pathophysiological pathways underlie these complications of spontaneous preterm birth. More research is needed to develop a clinically useful test.

Two other papers that we discuss explored the risk of late stillbirth (death ≥ 28 weeks' gestation) in the same sample of women enrolled in the Auckland Stillbirth Study. The findings indicate that obese women are twice as likely as normal weight/underweight women to have a late stillbirth and also, regular antenatal care attendance is very important: women who attended fewer than half of recommended antenatal visits were almost three times as likely to have a late stillbirth compared with women who accessed the recommended number of visits. Notably, small-for-gestational-age (SGA) babies that had not been identified as SGA prior to birth were significantly more at risk of being stillborn compared with SGA babies that were identified as such in the antenatal period.

Other topics covered in this issue concern the Traditional Pacific Healer pattern of use among mothers and children in the Pacific Islands Families Study (PIFS), worryingly low rates of screening for sexually transmitted infection during pregnancy among a cohort of nearly 7000 women who had a baby at Middlemore Hospital in 2009, research into infant low birth weight population prevalence, and findings confirming that we need to implement culturally appropriate dietary and lifestyle interventions to reduce pre-pregnancy obesity and optimise weight gain during pregnancy, particularly for Pacific women.

In 2012, the government identified support for vulnerable children as one of its top five priority areas for delivering better public services within tight financial constraints. The articles in this issue highlight that a good start to life begins before birth and requires an integrated approach to the health of mothers, children and families. More research with a focus on Pacific women and children is also required. We will continue to bring you relevant research on these topics because we recognise that increasing awareness through the Pacific Health Review is one way of encouraging evidence-based changes.

Thank you to our contributors this issue: Dr Andrea Sievwright, Dr Teuila Percival, Mary Matagi and Mary Roberts.

We welcome your feedback and comments on this issue of Pacific Health Review.

Hilda Fa'asalele

National Clinical Director Pacific Health

The team at Pacific Perspectives selected the articles and coordinated the commentaries for this edition.

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Pacific Health Review

Independent commentary provided by:

Dr Andrea Sievwright is a GP working for South Seas Health Care Trust in Otago. Andrea has a special interest in using integrated approaches to address antenatal care and youth health issues.

Dr Teuila Percival QSO has led Pacific child health initiatives in secondary and primary care in New Zealand for more than a decade.

Mary Matagi is a registered nurse and midwife who is of Samoan descent. Mary is a strong advocate for Pacific midwives at a national level and regional level. She is a Pacific representative on the NZ College of Midwives National Committee.

Mary Roberts is employed in the TAHA Well Pacific Mother and Infant Service at the School of Population Health at the University of Auckland. Her role is Nurse Educator.

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Relationship between obesity, ethnicity and risk of late stillbirth

Authors: Stacey T et al

Summary: This case-control study collected data from interviews with women with a singleton, late stillbirth (death ≥ 28 weeks' gestation) who were booked to give birth in the greater Auckland region between July 2006 and June 2009. Those with multiple pregnancies and congenital abnormalities were excluded. A total of 155 late stillbirth cases were identified and matched with 310 controls. Using multivariate analysis, maternal overweight and obesity, nulliparity, grandmultiparity, not being married, living in the most deprived areas, or not being in paid work were independently associated with late stillbirth. Obese women (based on WHO BMI groupings) had a more than 2-fold increase in risk compared to normal weight/underweight women (aOR 2.11; 95% CI 1.14 to 3.91). Using univariable analysis, maternal Pacific ethnicity was associated with increased risk, but was not found to be an independent risk factor when using multivariable analysis.

Comment (AS): Obesity is a significant issue for our Pacific population, with $>60\%$ obese as per an ethnic-specific definition of a BMI >32 kg/m². Obesity is associated with diabetes and pre-eclampsia, but even when adjusting for these factors, the effect of obesity remained significant in terms of risk association with late stillbirth. Similarly, after adjustment for socioeconomic status, obesity remained a significant risk factor. In a clinical context, it emphasises the importance of developing culturally appropriate nutritional interventions to reduce pre-pregnancy obesity and optimise weight control during pregnancy.

Reference: *BMC Pregnancy Childbirth* 2011;11:3

<http://www.biomedcentral.com/1471-2393/11/3>

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Risk factors for preterm birth in an international prospective cohort of nulliparous women

Authors: Dekker GA et al

Summary: This international prospective cohort study sets out to identify risk factors for spontaneous preterm birth (birth <37 weeks' gestation) in those with intact membranes (SPTB-IM) and those after prelabour rupture of the membranes (SPTB-PPROM). Nulliparous women who received antenatal care prior to 15 weeks' gestation between November 2004 and August 2008 in Adelaide, Australia, and Auckland, New Zealand, were invited to participate in the SCOPE study. Of those 3184 for whom follow-up was completed, 156 (4.9%) had their pregnancies complicated by SPTB. There was minimal overlap between the risk factors for SPTB-PPROM and SPTB-IM, with only shorter cervical length a significant risk factor in both categories. Specific risk factors for SPTB-IM included abnormal uterine Doppler flow at 20 ± 1 weeks' gestation, use of marijuana pre-pregnancy, being of Caucasian ethnicity, having a mother with a history of diabetes and/or pre-eclampsia and/or low birth weight (LBW) babies. Independent risk factors for SPTB-PPROM included, amongst others, participants not being first-born in the family, taking a longer time to conceive, hormonal fertility treatment (excluding clomiphene), mild hypertension, family history of recurrent gestational diabetes and maternal family history of miscarriage. All of these risk factors only provided a modest predictive capacity for both subtypes of SPTB in this cohort.

Comment (AS): This article indicates the difference in risk factors between the two phenotypes of SPTB, which suggests a different underlying pathophysiological pathway. Given its only modest capacity to predict risk, a clinically useful test would require phenotype-specific combinations of clinical risk factors. It has previously been described that there are ethnic differences in the prevalence of SPTB, although it was acknowledged that in this cohort, the majority of non-Caucasian pregnant women were of Asian ethnicity and only small numbers were of Māori and Pacific Island descent and therefore there was no opportunity for sub-analysis. This study is an important contribution towards identifying risk factors and shows the need for larger prospective studies. Rather than a blanket approach in terms of antenatal care, the emphasis is on matching intensity of prenatal care to risk identified, rather than identifying early signs of preterm labour when there is no opportunity to modify the outcome.

Reference: *PLoS ONE* 2012;7(7):e39154

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0039154>

Antenatal care, identification of suboptimal fetal growth and risk of late stillbirth: findings from the Auckland Stillbirth Study

Authors: Stacey T et al

Summary: This case-control study included the same sample population as described in the preceding article, as part of the Auckland Stillbirth Study. After adjustment for known confounders, those who accessed $<50\%$ of recommended antenatal visits had almost a three-fold increase in late stillbirth compared to those who accessed the recommended number of visits (aOR 2.68; 95% CI 1.04 to 6.90). In contrast, there was no difference in risk when comparing those who were booked with a Lead Maternity Carer (LMC) before or after the recommended 10 weeks' gestation. There was no difference in risk when comparing the different models of care; self-employed midwife, hospital-employed midwife, private obstetrician and general practitioner/shared care. Of the babies that weighed less than the 10th customised centile at birth, 7/57 (12.2%) of those that were stillborn were suspected to be small for gestational age (SGA) prior to delivery. There was a significant increase in risk of stillbirth in those for whom SGA was not identified antenatally as compared to those in which it had been identified (aOR 9.46; 95% CI 1.98 to 45.13).

Comment (AS): Utilisation of customised growth charts has already been found to improve the rate of antenatal detection of SGA. Given the significant proportion of Pacific women who are obese, this does mean that there is a greater need for serial growth scans in this population, as the symphysis fundal height is not as reliable for monitoring growth. Both forms of measurement are reliant on regular antenatal care. Interestingly, from this study there is no evidence to support the current Ministry of Health guidelines that patients should be seen by a LMC before 10 weeks' gestation.

There is an identified need for improvement in the access to and cultural appropriateness of maternity services. As has been high profile since the release of the 'External Review of Maternity Care in the Counties Manukau District', there is an urgent need for implementation of an integrated maternity information system, so that all data can be accessed by all primary and secondary maternity care providers and therefore improve continuity of care. Currently, there is no such system in place and therefore, those involved in pregnancy care at all levels need to be proactive in communicating and engaging with other practitioners. A key approach needs to be one using community engagement with utilisation of social and community health workers.

Reference: *Aust N Z J Obstet Gynaecol* 2012;52(3):242-7

<http://onlinelibrary.wiley.com/doi/10.1111/j.1479-828X.2011.01406.x/abstract>

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Utilisation of Traditional Healers by mothers and children of the Pacific Islands families study

Authors: Sundborn G et al

Summary: The Pacific Islands Families Study (PIFS) is a longitudinal study following 1398 Pacific children born in 2000 at Middlemore Hospital, Auckland. Data has been collected at birth, 6 weeks, and at 1, 2, 4 and 6 years of age.

This paper explores the use of Traditional Healers by cohort. Specifically, the authors have described the prevalence of Traditional Pacific Healer (TPH) use by children along with mothers' willingness to use TPH. There was a general decrease in both mothers' willingness and children's use of TPH in the PIFS cohort over time, from birth until 6 years of age. New Zealand-born parents were less likely than overseas-born parents to be willing to use TPH. Cook Island and Niuean mothers were also less willing and showed less use of TPH than Samoan and Tongan mothers. There was no difference in immunisation or GP use between mothers who were willing or not willing to use TPH.

Comment (TP): Traditional Healers in maternal and child health can have a neutral, complementary or negative relationship with conventional Western-style medicine. In New Zealand, the PIFS has described the TPH pattern of use. This is limited by the nature of the PIFS and the associated questionnaires, but still provides some very useful information for health clinicians. At the '6 weeks of age' measurement, approximately 40% of Tongan, 18% of Samoan and 3% of Other Pacific infants had already visited a TPH. Whereas there is a drop-off in use with age, this is important information for clinicians when working with families. Enquiry as to TPH attendance and treatment would be a reasonable inclusion in clinical history-taking. Though there seemed to be no effect between TPH and measures of conventional medicine (immunisation and GP attendance), this has not been the experience in other studies and in the region where TPH is associated with delay in presentation for medical care. It would be interesting to learn more about families' journeys to healthcare and when and how TPH fits into this.

Reference: *Pac Health Dialog* 2011;17(2):105-18

<http://www.ncbi.nlm.nih.gov/pubmed/22675808>

Screening for sexually transmitted infections in pregnancy at Middlemore Hospital, 2009

Authors: Ekeroma AJ et al

Summary: This study reviewed the 6795 women who had a baby at Middlemore Hospital in 2009. Of this group, 64.3% had an STI screen during pregnancy. This differed by ethnicity: 49.6% of European, 66.3% of Māori and 70.4% of Pacific women were screened. The study team reviewed actual STI laboratory data and could assess the adequacy of the STI screen for each woman. Eighty-two percent of screened women had chlamydia swabs, 85% had trichomonas and 33% had swabs for gonorrhoea.

Chlamydia was the commonest positive STI identified overall (8.2%), followed by trichomonas (2.2%) and gonorrhoea (0.2%). Rates varied with ethnicity: chlamydial infection was highest in Pacific (10.7%), then Māori (10.3%), European (4.7%) and Asian (1.9%) women. There was also an association with younger maternal age, with the highest rate in the under-20-year-olds. Private LMCs were significantly less likely to carry out STI screening than Counties Manukau District Health Board (CMDHB) LMCs.

The authors note that 30% of Pacific and 34% of Māori women were not STI screened. Based on their study findings, this equates to approximately 143 women in 2009 with untreated chlamydia.

Comment (TP): This is an important study documenting perhaps less-than-optimal maternity healthcare for CMDHB women. The STI in pregnancy association with maternal and infant morbidity is well established and in CMDHB there is an increased STI prevalence risk with Pacific, Māori and young age. That said, 3.0% of the 30–34-year-olds and 1.3% of the 35-year+ age group were positive for chlamydia, so STI screening should not be considered for the younger age groups only.

(MM): Unless culturally competent and effective strategies are implemented, preventable STIs like chlamydia, which is a global health problem, will continue to escalate. Left untreated, STIs may result in long-term sequelae impacting significantly on public health costs. This interesting study revealed disturbingly low STI screening rates (64%) of expectant mothers by LMCs. This raises concerns for those who were not tested, adding strength to earlier studies (Lawton B et al. *N Z Med J*. 2004;117[1194]:1-7; Rose S et al. *N Z Med J*. 2005;118[1211]:U1348) recommending routine STI testing. Untreated women in pregnancy potentiate complications that may have detrimental effects on the neonate. What is unclear is the number of women (including age and ethnicity) who declined testing, were ill-informed, or were non-compliant. Interestingly, one reflects on how many of the women detected with STIs informed their partners, complied with intervention and were re-tested post-treatment.

Bottom line: this is a Public Health issue that affects everyone irrespective of ethnicity or socioeconomic status. Therefore, despite paucity of research, every precaution should be taken to minimise risks for all women in pregnancy. This study has clearly identified gaps in the system, which should prompt policy makers to take a stronger stance and review the current status on STI screening, particularly in effecting best practice guidelines.

Reference: *N Z Med J* 2012;125(1359):23-9

<http://journal.nzma.org.nz/journal/abstract.php?id=5283>

What defines "low birth weight" in Pacific infants born in New Zealand?

Authors: Sundborn G et al

Summary: The aim of this study was to report on the ethnic-specific proportions of LBW for New Zealand-born Samoan, Tongan, Cook Island Māori and Niuean babies. Data on birth weights was extracted from the PIFS cohort with 1398 infants born in the year 2000 at Middlemore Hospital. Twins were excluded in the analysis, leaving 1195 singleton births to analyse. There was no significant LBW percentage difference between the four ethnic groups, but there was a significant difference in mean birth weights, with Tongan and Samoan infants having heavier population means than Cook Island and Niuean infants. (Tongan 3751g, Samoan 3699g, Cook Island 3523g, Niuean 3467g). The 10th and 90th percentiles were also derived for each of the ethnic groups. Using these PIFS ethnic-specific birth weight profiles, the 10th percentile was centred around 3000g for all groups, with little variability (range of 171g) between the groups. The 90th percentile varied more, with a range of 568g across the groups. The study demonstrates that Pacific infants are larger than other New Zealand infants, with higher mean 10th and 90th percentiles. The authors raised the question of whether the LBW cut-off threshold for Pacific infants would be more appropriate at 3000g rather than 2500g.

Comment (TP): Infant LBW (<2500g) has been associated in clinical practice with an increased risk of morbidity and mortality in the newborn. LBW population prevalence is also used as a population health indicator sensitive to clinical factors such as antenatal care, maternal nutrition, smoking and public health factors such as socioeconomic population status. Rooth¹ showed that population-specific LBW, defined as two standard deviations below the mean, can vary by as much as 350g between ethnic groups. This variation can limit the usefulness of 2500g of the LBW as an indicator of health or risk in different populations. For population-specific LBW cut-off thresholds to be clinically useful, there needs to be further research into perinatal mortality and birth weight in Pacific babies. The PIFS birth weight study is useful in describing the NZ Pacific ethnic-specific birth weight profiles for Samoan, Tongan, Cook Island and Niuean peoples.

It is interesting to compare the NZ Samoan (PIFS) mean birth weight of 3699g with the Pacific Child Health Indicator Project (Pacific CHIP)² birth weight profile for babies born in Samoa (13,900 births in Upolu for years 2006–2009), where the mean was 3420g and 10th pc 2800g; somewhat lower than the NZ Samoan babies. Comparison of Island-born and NZ-born infant and maternal populations is perhaps another area for future research.

1. Rooth G. Low birth weight revised. *Lancet* 1980;1(8169):639-41.

2. Percival T, Stowers L. Pacific Child Health Indicator Project: information for action. *Pac Health Dialog* 2012;18(1):193-8.

Reference: *Pac Health Dialog* 2011;17(2):23-31

<http://www.ncbi.nlm.nih.gov/pubmed/22675802>

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Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence

Authors: Thangaratinam S et al

Summary: Obesity is a key factor in the maternal and infant health of Pacific women. This is highlighted by the adverse morbidities associated with obesity and pregnancy and further emphasised by the ethnic disparity evident in New Zealand population health statistics.¹ It also contributes to metabolic disorders such as gestational diabetes mellitus (GDM), pregnancy hypertension, and preeclampsia, all of which can occur during pregnancy.^{2,3} The increasing national perinatal mortality rates have been associated with maternal factors such as obesity and type 2 diabetes, commonly seen among Pacific mothers.^{4,5}

This study highlighted dietary interventions as having the greatest effect on the reduction of maternal weight gain; obstetric complications and improvement of maternal outcomes. Overall, the dietary intervention proved safe and effective, resulting in positive clinical implications for interventions based upon diet. This reduced gestational weight gain by approximately 4 kg and indicated reductions in the risk of GDM, preeclampsia and gestational hypertension.

1. Stacey T, Mitchell EA. Sleep position and risk of late stillbirth. BMC Pregnancy and Childbirth 2012;12(Suppl 1):A12.
2. Anderson N et al. The impact of maternal body mass index on the phenotype of pre-eclampsia: a prospective cohort study. BJOG 2012;119:589-95.
3. Backes CH et al. Maternal preeclampsia and neonatal outcomes. J Pregnancy 2011;2011: 214365.
4. Cundy T et al. Perinatal mortality in type 2 diabetes mellitus. Diabet Med 2000;17(1):33-9.
5. Tieu J et al. Screening and subsequent management for gestational diabetes for improving maternal and infant health. Cochrane Database Syst Rev 2010;(7):CD007222.

Comment (MR): This research confirms the need to implement dietary and lifestyle interventions in pregnancy, which will certainly benefit Pacific mothers and infants. However, in order for this to happen, it is essential to adopt collaborative and culturally appropriate models of care that enable effective engagement and assistance for Pacific mothers and infants and the wider Pacific families and communities. The "External Review of Maternity Care in Counties Manukau District" supports this view and emphasises the need for development of culturally appropriate nutritional interventions to reduce pre-pregnancy obesity and optimise weight gain during pregnancy, particularly for Pacific women.

Reference: *BMJ* 2012;344:e2088

<http://www.bmj.com/content/344/bmj.e2088>

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