Patterns and characteristics of ethnic Australian women utilising ethno-specific maternal and child health services

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Abstract

Few studies have explored the socio-economic profile, service utilisation, obstetric history and pregnancy outcomes of ethnic women who utilise ethno-specific obstetric services in Australia. The purpose of this study was to form a profile of women who accessed the Ethnic Obstetric Liaison Services (EOLO) in South Western Sydney Area Health Service (SWSAHS), New South Wales and explore their beliefs about using maternal and infant health services. We found that the prevalence of risks and special needs varied significantly by language groups in this study sample. Our results suggest that equity of access to quality care for this group of mothers and infants can be assured if models similar to the EOLO in SWSAHS are thoroughly planned and developed, and take account of cultural appropriateness for the population served.

Maternal and child health of non-English speaking population

During the last two decades, studies have consistently demonstrated that maternal attitudes, beliefs and behaviour are significantly associated with the health outcomes of the mother and her new-born infant (Bodo & Gibson, 1999; Hulsey et al, 2000; Whiteford & Szelag 2000). Within the multicultural Australian setting it is important to explore the maternal attitudes, beliefs and behaviour, and socioeconomic profile of pregnant women from a Non English Speaking Background (NESB) to ensure their needs are meet within an appropriate obstetric service model.

It has been reported that NESB immigrant women in South Australia were less often from unemployed families and more often from those of low occupational status; older with fewer teenagers and single women among them; were of higher parity; and tended to commence antenatal care later (Chan, Roder & Machaper 1988). It has also been reported that NESB women were more likely to have Hepatitis B, to develop gestational diabetes and had higher incidence of post partum complications compared with Australian born women (NSW Health 1989; Ma & Bauman 1996; Henry et al 1992). The rate of induction of labour for Australian-born women (24%) was almost double the rate of Vietnamese-born women (13%) (Sullivan & Shepherd 1997). Teenage women and non-Caucasian women of low socioeconomic status also have lower odds of obstetric intervention for non-spontaneous labour and Caesarean section. They were more likely to have anaemia, ante partum haemorrhage and a Caesarean section (Chan, Roder & Machaper 1988).

In relation to birth outcomes, the mean birth weight of babes of Vietnamese women was 263g lower than that of babies of Australian-born women (Chan, Roder & Machaper 1988). Another study in South Western Sydney also revealed that the birth weights of babies of Vietnamese-born women were significantly lower at the 10th, 50th, and 90th percentile (Henry et al 1992). Algert and colleagues (1993) found the increased risk of a small for gestation age birth to Vietnamese-born women was related to lower overall birth weight distributions. It is not clear to what extent differences might be due to culturally determined behavioural factors (eg, caloric intake) or to biological factors (eg, stature, weight-for-height ratio). The latter may of course be modified by environmental as well as genetic influences (Algert & Roberts 1993). It has been argued that ethnicity and race are significantly associated with the health of children and the utilisation of health services. This association is independent of family income, parental educational attainment, family structure and health insurance (Flores et al 1999). Yet another study indicated that the difference in risk profiles by socioeconomic status group may not only reflect dissimilar levels of income, education, housing and nutrition, but also contrasting lifestyle patterns (Jonas, Roder & Chan 1992).

In other countries including the USA, studies have shown that closer kin access is associated with a lower probability of breastfeeding. These results suggest that it may not be adequate to rely on kin networks or kin assistance to improve healthy birth outcomes such as breast feeding (Casper & Hogan 1990). Furthermore, a study of the obstetric profiles and pregnancy outcome of immigrant women with refugee status in Ireland found that the average gestational age at the first booking-in visit was 33 weeks. The majority of these pregnant women (63%) were multiparous, they had low rates of epidural analgesia and higher perinatal mortality rate compared with Irish women (Lalchandani, MacQuillan & Shei 2001).

Local health care services should be easier and more appropriate for Vietnamese people to use, especially with regard to communication with members of the primary health care team. It is a popular misconception that Vietnamese people have adapted easily to life in Britain and therefore require little special attention from health professionals (Jonathan, Nguyen & Madeley 1996). Chinese and Vietnamese people have lower levels of recording and consultation of preventive care information by selected general practitioners and despite major socioeconomic inequity, equitable recording of preventive activity for the major causes of death for white, black and Bangladeshi populations is possible (Atri et al 1996).

In Australia the increasing diversity of ethnic groups has been challenging when planning and providing high quality, obstetric care. The Shearman report, released in 1989, highlighted deficiencies in obstetric services relating to the needs of immigrant women (NSW Health, 1989). The Ethnic Obstetric Liaison Services (EOLO) program was established in response to the release of the Shearman report in an attempt to improve service delivery and outcomes for immigrant, pregnant NESB women. The program was developed and implemented in two Area Health Services in New South Wales (NSW), Western Sydney Area Health Services and South Western Sydney Area Health Services (SWSAHS). The present study was undertaken to explore maternal characteristics, obstetric history, service utilisation, post-partum complications, and pregnancy outcomes among ethnic women (Arabic, Cambodian, Chinese, Laotian and Vietnamese) accessing the EOLO service in the SWSAHS.

Methods

Setting

The South Western Sydney Area Health Service (SWSAHS) covers an area of 6237 square kilometres, has a population of over 700,000 and is growing rapidly. Many of the suburbs within the Area have some of the highest levels of socio-economic disadvantage across Australia (ABS 1998). Over 12,000 babies are born each year to mothers residing in SWSAHS. In 1996-97 the crude birth rate for SWSAHS was 17.5 per 1000 population, the highest in NSW and significantly higher than the rate of 14.5 per 1000 for all NSW (SWSAHS 2000). South Western Sydney has a high proportion of its residents who are of NESB. Arabic, Spanish, Chinese and Vietnamese are the major languages spoken by people from NESB. Immigrants of South East Asian origin are more likely to have arrived in the last 20 years. The Area is generally recognised as one with large sections of socio-economic deprivation and is characterised by low incomes, low education, low levels of private health insurance cover and high rates of unemployment. SWSAHS has a significantly higher proportion of public

housing dwellings (10.8%) than the rest of Sydney (5.8%). Liverpool and Fairfield have the highest unemployment rates of 15.1% and 21.9% respectively (SWSAHS 1994).

Study design and data sources

Within the Maternal and Child Health services in SWSAHS there are a number of clinical data collection systems that have relevance for a diverse range of purposes such as clinical practice, health planning, policy development and monitoring population health. Services capturing clinical information on mothers and infants include community-based services (Well Baby Clinics), post-natal home visiting programs (Domiciliary Midwife Program), and the EOLO.

The EOLO data collection, a scannable structured record system, was used to capture information during the pregnant woman's first contact with the health service. Some data items on ethnic issues were identified by the bilingual EOLO health workers, while others were selected from standardised measures – such as those from the Australian Bureau of Statistics. The information was elicited by the EOLO worker in the pregnant woman's own language as part of the routine clinical assessment. The standardised data collection was part of the medical record kept by the EOLO. The following specific variables were collected for these women as part of routine clinic practice: ethnicity, length of residency in Australia, immigration status, self-rated fluency in spoken English, past and current employment, significant stressful events, relationship with partner, cultural ties and knowledge and beliefs about breastfeeding. This information was collated with the clinical information in the Obstetrics Package, which had been developed by midwives for collecting clinical information from the time of the first antenatal visit up until the discharge of the mother and infant from hospital.

This study is a cohort design, based on a sample assembled during the period April 1998 to October 2000 from women accessing EOLO services in SWSAHS. The total sample was 829 pregnant women.

Data analysis

Descriptive statistical techniques such as frequency distribution and Chi-square analysis were used. Univariate and multivariate methods were used to analyse the association between variables. A P-value of less than 0.05 was considered statistically significant. The SPSS package was used for all analyses (Version 9). Standard measures of maternal socio-demographic characteristics were included in this study to control for known confounders.

Results

Social demographics and immigration status

The study sample's social demographic and immigration status are summarised in Table 1. There were 25 women (3%) who were younger than twenty years old. Approximately 570 women (69%) migrated to Australia under the family reunion category. Among the 5 immigrant groups, the largest language groups were Vietnamese (51%), followed by Cambodian (23%) and Chinese (14%). One hundred and fifty eight women (19%) and 317 women (38%) reported having lived in Australia for one year or less and for more than 5 years respectively. One hundred and six women (13%) were in full-time employment at the time of their first visit to the antenatal clinic and 40% of women reported living in public housing accommodation.

Out of the 90% who were married or living with a partner, 55% reported their husband/partner being in full time employment. Another 20% of partners were unemployed. Two hundred and thirty four women (28%) reported student as their occupation in their country of birth; this number had dropped to 53 (6%) since arriving in Australia. For the partners, 37% reported being students in their country of birth compared with only 11% after arriving in Australia. The proportion of partners who reported being unemployed in their country of birth (7%) had almost tripled following their arrival in Australia (18%). Out of the women who were in some sort of employment while pregnant, only 200 (24%) intended to resume work after the birth of their baby.

Two hundred and thirty one women (27%) stated they could not "speak English at all", 410 (50%) felt they did not speak "English very well" and 60 women (8%) reported having tertiary qualifications. A significant shift in occupational status was evidenced for almost one third of this sample of pregnant women: 234 (27%)

women were students in the country of their birth, but this number had dropped to 53 (7%) after they arrived in Australia. For the partners the proportion that reported student status in the country of their birth was 37%. This proportion dropped to 11% after their arrival in Australia. The proportion of partners who reported employment as unskilled labourers in the country of their birth was 14%. This increased to 46% after their arrival in Australia.

Thirty-four percent of this sample stated that they had to support family members overseas. One hundred and ten women (13%) had experienced the death of a close friend or family member while living in Australia. Three hundred and sixty one women (43%) were living away from someone close to them. Thirty-nine of these women had been separated from their partner for more than one month due to marital difficulties, immigration difficulties or work commitments.

Birthing and pregnancy related issues

Table 2 describes the study sample in relation to birthing and pregnancy issues. Thirty eight per cent of this sample were first time mothers with no previous breastfeeding experience. Almost a quarter of this sample of women felt that their partners were only "somewhat pleased/not at all pleased" with the present pregnancy. Eighty percent of this sample of women reported that they intent to breastfeed their babies, however only 52% reported that they had a good knowledge and understanding of breastfeeding. Seventy five percent of partners strongly agreed with their partner's intention to breastfeed the baby.

The Edinburgh Postnatal Depression Scale (EPDS) was administered to all the women in this sample. Translated versions were available for all of the languages (Cox et al 1987). According to the EPDS scale, more than 20% of this sample was classified with maternal distress or depression. Twelve per cent of the women in this sample developed gestational diabetes during their pregnancy and 40 women (5%) delivered before 36 weeks gestation. In relation to birth outcomes, 5% of babies were classified as low birth weight and more than 11% of newborns were admitted to the special care nursery (SCN) or the neonatal intensive care unit (NICU).

Table 1: maternal characteristics (N=829)

Maternal Characteristics	N	%
Age		
<20 years old	25	3.0
20-29	423	51.0
30-39	353	42.6
40 or more	28	3.4
Immigration status		
Family reunion	570	68.8
Other	259	31.2
Length of residence in Australia		
<1 year	158	19.1
1-3 years	147	17.7
3-5 years	123	14.8
> 5years	317	38.2
Language most spoken at home		
Arabic	54	6.5
Chinese	116	14.0
Vietnamese	423	51.0
Laotian	36	4.3
Cambodian	192	23.2
Other	4	0.5

Table 1: maternal characteristics (N=829) (cont)

Maternal Characteristics	N	%
Student in country of birth (women)	234	28.2
Student in country of birth (partner)	306	36.9
Student in Australia (women)	53	6.3
Student in Australia (partner)	91	11.0
Partner Employment		
Full-time	465	55.0
Unemployed	165	20.0
Rent a public house	331	40.0
Marital status		
Single	50	6.0
Married	660	79.6
Formally separated	25	3.0
Living with partner	88	10.6
English Comprehension		
Very well	52	6.3
Well	133	16.0
Not very well	410	49.5
Not at all	231	27.9
Highest level of education		
Never attended school	9	1.1
Primary school	120	14.5
Some high school	367	44.4
HSC/year 12	203	24.6
TAFE/Diploma	59	7.1
University/CAE/ other tertiary	66	8.0
Supporting family overseas	284	34.0
Living away from someone close	361	43.5
Maternal smoking	20	2.4

Table 2: birthing and pregnancy issues (N=829)

	N	%
First time mothers	315	37.9
Partner pleased about this pregnancy?		
Extremely/very pleased	419	74.7
Pleased/somewhat pleased	149	17.9
Not at all pleased	39	4.7
Breastfed before	372	44.9
Intend to breastfeed this baby	665	80.1
How sure you will breast-feed this baby (absolutely sure/sure)	593	71.5
Partner agree that breast-feeding is best for your baby		
Strongly/mostly agrees	554	74.4
Neither agree nor disagrees	164	22.0
Disagree/strongly disagrees	27	3.6
Does your mother want you to breastfeed?		
Most definitely	185	22.3
Some what or is against it	121	14.6
N/A (eg do not have or not living with mothers)	489	59.0
Good knowledge and understanding of breastfeeding	415	51.9
Edinburgh Scale Scores (EDS)		
0-8 Normal psychological wellbeing	433	52.2
9-12 Maternal distress, possibility of depression	139	16.8
>13 Significant maternal depression	55	6.6
Gestational diabetes	100	12.1
Gestational age		
<36 weeks	40	4.8
>36 weeks	789	95.1
*Low birth-weights (LBW)**	40	4.8
Respiratory distress	26	3.1
*Admit SCN/NICU >4 hours***	93	11.3

* LBW: birth weight <=2500gms

** Admitted to Special Care Nursery or Neonatal Intensive Care Unit for more than 4 hours

Association of maternal characteristics and language most spoken at home

Almost two thirds of Vietnamese women rated their health less than optimal. Eighteen per cent of Arabic women rated their overall health less than "excellent/very good", and almost half of Chinese women rated their health as less than "excellent/very good" (Table 3). Maternal distress (9 – 12 on the EPDS) was most prevalent among Chinese women (33%), followed by Cambodian women (31%) and Vietnamese women (18%). Previous breastfeeding experience varied across the language groups with 68% of Arabic speaking women and 56% of Chinese women reported having previous breastfeeding experience. Less than 50% of Vietnamese, Cambodian and Laotian women had breastfeeding experience previously (Table 3).

Table 3: maternal characteristics by language most spoken at home (percent).

Language most spoken at home (N=849)						
	Arabic	Chinese	Vietnamese	Laotian	Cambodian	Other
General health status						
Excellent	74.1	7.0	5.8	-	-	-
Very good	7.4	43.9	23.0	25.4	23.3	-
Good	14.8	44.7	61.6	58.3	67.0	50.0
Fair/poor	3.7	4.4	9.6	16.7	9.0	50.5
Edinburgh Postnatal Depression Scale Scores						
0-8 Normal	99.9	58.6	72.9	99.9	58.8	100.0
9-12 Maternal distress	-	33.3	18.1		30.7	
>13 Maternal depression	-	-		-		
Type of ante-natal care						
Shared care	42.3	38.4	45.3	34.4	31.5	25.0
Public	57.7	59.6	51.6	62.5	66.7	75.0
Private	-	1.0	2.9	3.1	1.8	-
No antenatal care	-	1.0	0.2	-	-	-
Breastfed before	67.9	55.6	43.3	48.5	47.5	50.0
Pre-termed birth (<36 weeks)	2.0	1.7	5.0	3.0	8.0	-
Gestational diabetes	13.0	14.0	12.0	22.0	8.3	25.0
Maternal smoking	22.2	2.0	0.9	3.0	0.5	-

High prevalence of gestational diabetes among NESB in Australia has been reported (Oats & Beischer, 1986; Beischer et al, 1991; NSW 1998). Our results also revealed that the prevalence rates of gestational diabetes were 22%, 14%, 13% and 12% for Laotian, Chinese, Arabic and Vietnamese women respectively. Twenty per cent of women in this sample reported smoking. The highest prevalence of maternal smoking was among those women who had resided in Australia for 3 – 5 years. For women who had lived in Australia for one year or less the prevalence of maternal smoking was 2.5%. Among the 5 language groups, Arabic women reported the highest (22%) prevalence of maternal smoking (Table 3). Women who had arrived in Australia within one year or less were most likely to have accessed a clinic run by midwives (21%). This proportion decreased to almost half with increasing length of residency in Australia (13%). Women who had lived in Australia for 1 – 3 years were most likely to access hospital based antenatal care (46%) (Table 4).

Table 4: maternal characteristics by length of residence in Australia (percent)

	Length of residence in Australia Total			
	Less than 1 year	1-3 years	More than 3 years	N (%)
Maternal smoking	2.5	0.7	1.8	13 (1.7)
Type of antenatal care				
Doctors clinic	36.1	46.3	17.6	264 (35.4)
Midwives clinic	21.5	14.3	12.4	112 (15.0)
Private obstetrician	1.3	-	-	11 (1.5)
GP	2.0	2.0	3.1	25 (3.4)
GP & Obstetrician	8.9	8.8	10.5	83 (11.1)
Midwife & Obstetrician	-	-	1.5	11 (1.5)
Team Midwife program	1.9	0.7	0.3	2 (0.3)
Essential hypertention	0.6	0.5	-	3 (0.4)
Gestational age <36 weeks	6.4	1.4	5.7	37 (5.0)
Birth weights <2500gms	8.9	2.0	5.2	40 (5.4)
Admission to SCN/NICU	13.4	8.2	11.8	85 (11.4)
Antepartum haemorrahge	0.6	1.4	2.3	13 (1.7)
Pregnancy-induced hypertension	1.3	1.4	4.1	22 (93.0)
Resuscitation required	17.1	8.5	20.2	97 (17.1)
Gestational diabetes	8.2	0.7	1.8	13 (1.7)
Diabetes mellitus	-	1.4	0.5	4 (0.5)

Among the 5 immigrant groups, Cambodian and Laotian women were 3 to 6 times more likely to be unemployed compared with Vietnamese women. Cambodian mothers were 6 times more likely to never have attended school or just had some primary education compared with Vietnamese mothers (Table 5). The percentage of poor to fair general health status among immigrant women was significantly higher among Vietnamese and Cambodian women (approximately 24% and 56%). Mothers born in Vietnam were 3 times more likely to experience poor health compared with Arabic women. Arabic speaking women were 30 times more likely to smoke during pregnancy compared with Vietnamese speaking women. Lebanese or Arabic speaking women were 5 times more likely to have two or more previous pregnancies compared with Vietnamese speaking women. Even though there was not statistical significance, infants of Arabic and Laotian speaking women were 1.5 and 2 times more likely to be admitted to SCN/NICU compared with infants of Vietnamese speaking women (Table 6).

Table 5: association of maternal characteristics and language most spoken at home

	Primary education or none		General health status Fair/poor		Maternal smoking	
Language most spoken at home	%	OR[b] (95% CI)	%	OR[b] (95% CI)	%	OR[b] (95% CI)
Vietnamese [a]						
Chinese	17.8	3.48(1.92-6.32)*	6.9	0.43(0.17-1.12)	10.0	1.84(0.33-10.16)
Cambodian	45.7	6.22(3.82—4.19)*	23.6	0.94(0.51-1.69)	5.0	0.55(0.06-4.94)
Laotian	6.2	4.20(10.20-9.64)*	8.3	1.89(0.74-1.55)	5.0	2.39(0.27-21.02)
Arabic speaking	8.5	2.98(1.69-6.33)*	2.8	0.36(0.08-4.80)	60.0	29.9(9.24-96.94)*

a Compared with Vietnamese women

b OR: Odds Ratio

* Significant P<0.05

Table 6: association of medical and obstetric conditions and language most spoken at home

	Multipara		Gestational diabetes		Admission to SCN/NICU	
Language most spoken at home	%	OR[b] (95% CI)	%	OR[b] (95% CI)	%	OR[b] (95% CI)
Vietnamese [a]						
Chinese	9.0	0.91(0.38-2.13)	12.5	0.67(0.36-1.24)	9.7	0.94(0.41-2.17)
Cambodian	35.9	1.50(1.01-2.30)*	8.9	2.26(1.01-2.03)	12.3	1.12(0.66-1.89)
Laotian	4.7	0.40(0.05-3.05)	22.2	0.82(0.34-4.82)	20.0	2.11(0.87-5.08)
Arabic speaking	17.9	4.94(2.41-10.14)*	11.3	0.61(0.80-5.23)	17.0	1.52(0.72-3.23)

a Compared with Vietnamese women

b OR: Odds Ratio

* Significant P<0.05

Discussion

One of the limitations of this observational study is the convenience sampling. Consecutive sampling was not feasible, because the EOLO staff were working in parallel with the antenatal clinic (ANC) staff not as an integral part of the ANC. As a result not all eligible NESB women were engaging with EOLO staff. To assess the representativeness of this sample, data from this study was compared with the NSW Health Department Midwives Data Collection (MDC). The results of this comparison suggest that our EOLO sample is representative of NESB mothers in SWSAHS. For example the prevalence rates of maternal smoking, pregnancy induced hypertension and antepartum hemorrhage were very similar for both samples (Table 7).

Table 7: comparison of maternal characteristics by using EOLO (N=829) and NSW Midwife Data Collection (N=23085) April 1998-Oct 2000 (percent)

	Language most spoken at home									
	Arabic		Chinese		Vietnamese		Laotian		Cambodian	
	EOLO	MDC	EOLO	MDC	EOLO	MDC	EOLO	MDC	EOLO	MDC
Age (years)										
<20	0.0	4.0	0	0.29	2.6	1.1	2.8	1.6	6.8	2.6
20-29	42.6	55.6	34.5	30.0	57.4	51.6	44.4	44.8	51.0	60.3
30-39	53.7	37.7	59.5	62.4	36.2	43.4	52.8	52	40.5	35.1
40 or more	3.7	2.74	6.0	7.28	3.8	3.8	0.0	1.6	1.6	2.0
Parity										
1	22.2	27.2	48.3	42.9	37.6	36.7	25.0	38.5	23.8	36.7
2-3	27.8	32.8	19.0	16.2	14.2	15.5	30.6	27.6	36.7	20.3
4 or more	13.0	11.6	1.7	0.9	3.3	1.9	0.0	3.1	2.9	2.3
Maternal smoking	22.2	11.5	2.0	0.3	1.1	1.2	3.0	3.2	0.5	-
Pregnancy induced hypertension	-	5.4	6.9	4.7	2.8	3.5	5.6	5.6	1.6	3.3
Antepartum hemorrhage	-	1.3	1.1	1.9	1.1	1.7	3.0	4.0	2.1	1.3

The relevant findings relating to the socio-demographic characteristics of this sample of NESB women relate to known indicators of potential stress for a pregnant woman and a mother of a newborn infant. Firstly in relation to cultural and social isolation, the results from this study spell out "high risk" of adverse health outcomes for both the woman and her infant. For example 19% of the women had lived in Australia for less than one year, and almost 44% of the women had been living away from some one close since coming to Australia. Forty percent of the women were living in public housing accommodation. One hundred and ten women had

experienced the death of a close friend or family member while living in Australia and 39 women had been separated from their partner for more than one month due to immigration difficulties and work commitments. Prevalence of maternal psychological distress was particularly high for Chinese women (33%) and Cambodian women (31%). Prevention programs targeting these NESB women should be developed based on the identified risks, and integrated into mainstream antenatal and obstetric care. Bilingual capacity is a key factor if such programs are to effect measurable change.

Secondly, in relation to education and employment, results from this study revealed that there was low educational attainment; low full time employment (< 28%) of these women; and an unemployment rate of their partners that tripled in Australia compared with their country of birth (COB). The results also suggested that there was a shift in employment for their partners as unskilled labourers from 14% in their COB to a rate of 46% following their arrival in Australia. These are important indicators of stress for the pregnant woman and her family. This was exacerbated by the fact that one third of these women provided financial support for their family overseas. The results from this study showed that the difference in risk profile among these women have reflected various levels of income, education, and housing, which were consistent with the study of Jonas et al (1992). More than 25% of the women did not speak any English at all, and 50% only spoke some English. More than 30% of the women had been students in their COB compared with only 7% following their arrival in Australia. Similar findings have been identified in the study of Jonathan et al 1996. If outcomes for the NESB mother and her child are to improve, an inter-sectoral approach to health prevention and promotion should be adopted to ensure that the educational attainment and the employment opportunities for both the woman and her partner are maximised. As the educational attainment of mothers is one of the most powerful predictors of optimal health for the infant and young child, improved access to educational opportunities for them is particularly important.

Thirdly, in relation to maternal health behaviour such as successful breastfeeding within the first 6 months after birth, which is an important determinant of optimal physical and psychological wellbeing of the infant, this study reveals that 80% of the women reported intent to breastfeed their baby. Out of those only approximately half felt that they had sufficient knowledge and skills in breastfeeding, and almost one third of the sample were first time mothers. Other studies have shown a significant number of NESB mothers revert to bottle-feeding within the first week or two of the baby's life (Tran et al 2001). The possible reason is because the mothers cannot get assistance with breastfeeding problems during their stay in the maternity ward and during the immediate post discharge period due to the lack of bilingual staff (Tran et al 2001). A pro-active approach to encouraging and supporting breastfeeding for NESB pregnant women, which is culturally appropriate, would ensure that initiation and duration of breastfeeding is maximised within this population.

Finally, in relation to dedicated service models, the prevalence of risks and special needs varied significantly by language groups in this study sample. If interventions are to translate into measurable improvements in health outcomes, future service models for antenatal and obstetric care must be thoroughly planned and developed. Dedicated service models need to be based on the culturally specific needs of all the significant language groups within any Area Health Service/Region. Based on the results from this study, if the significant risks identified for the NESB mothers are to be addressed, it would appear that a dedicated service such as the EOLO services in SWSAHS is essential.

Acknowledgments

The authors would like to acknowledge the support and commitment from the staff of the Ethnic Obstetric Liaison Services in SWSAHS, who often carry a significant and unpredictable workload in their capacity of "sole advocate" for their client during the challenging period of pregnancy and initiation into motherhood. We also would like to acknowledge members of the Health Outcome and Resource Team at Macarthur Sector of SWSAHS for their efforts in assisting the EOLO staff in the collection and maintenance of the EOLO database.

References

Afflick EF, Nancy A, Hessol, MS, Eliseo J & Pérez-Stable 1998, 'Maternal Birthplace, Ethnicity, and Low Birth Weight in California', *Archives of Pediatrics and Adolescent Medicine*, vol 152, pp 1105-1112.

Algert C, Roberts C & Frommer M 1993, 'Low birth-weight in NSW, 1987: a population-based study', *Australian and New Zealand Journal of Obstetrics and Gynaecology*, vol 33, pp 243-248.

Atri J, Falshaw M, Livingstone A & Robson J 1996, 'Fair shares in health care? Ethnic and socioeconomic influences on recording of preventive care in selected inner London general practices', *British Medical Journal,* vol 312, pp 614-617.

Beischer NA, Oats JN, Henry LA, Sheedy MT & Walstab JE 1991, 'Incidence and Severity of Gestational Diabetes Mellitus according to Country of Birth in Women Living in Australia', *Diabetes*, vol 40 (suppl 2) pp 35-38.

Bodo K & Gibson N 1999, 'Childbirth customs in Vietnamese traditions', *Canadian Family Physician*, vol 45 pp 690-2, 695-7.

Casper LM & Hogan DP 1990, 'Family networks in prenatal and postnatal health', *Social Biology*, vol 37 pp 84-101.

Chan A, Roder D & Macharper T 1988, 'Obstetric profiles of immigrant women from non-English speaking countries in South Australia, 1981-1983', *Australian and New Zealand Journal of Obstetrics and Gynaecology*, vol 28, p 90-95.

CoxJL, Holden JM, Sagovsky R, 'Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale, *British Journal of Psychiatry* 1987, vol 150, p 782-86.

Doery JCG, Edus K, Healy D, Bishop S & Tippett C 1989, 'Very high prevalence of gestational diabetes in Vietnamese and Cambodian women', *Medical Journal of Australia*, vol 151, p 111.

Flores G, Bauchner H, Feinstein AR & Nguyen DT 1999, 'The impact of ethnicity, income, and parental education on children's health and use of health services', *American Journal of Public Health*', vol 9, pp 1066-1071.

Jonathan S, Nguyen T & Madeley RJ 1996, Vietnamese people in study may have had language difficulties', *British Medical Journal*, vol 313 p48.

Jonas O, Roder D, Chan A 1992, 'The association of maternal and socioeconomic charateristics in metropolitan Adelaide with medical, obstetric and labour complications and pregnancy outcomes', *Australian and New Zealand Journal of Obstetricts and Gynaecology,* vol 32, pp 1-5.

Henry OA, Guaran RL, Petterson CD, & Walstab JE 1992, 'Obstetric and birthweight differences between Vietnam-born and Australian-born women', *Medical Journal of Australia*, vol 156, pp 321-4.

Hulsey TM, Laken M, Miller V & Ager J 2000, 'The influence of attitudes about unintended pregnancy on use of prenatal and postpartum care', *Journal of Perinatology*, vol 20, pp 513-9.

Lalchandani S, MacQuillan K & Shei O 2001, 'Obstetric profiles and pregnancy outcomes of immigrant women with refugee status', *Irish Medical Journal*, vol 94, pp 79-80.

Ma J & Baumann A 1996, 'A. Obstetric Profiles and pregnancy outcomes of immigrant women in New South Wales, 1990-1992', *Australian and New Zealand Journal of Obstetrics and Gynaecology,* vol 36, pp 119-125.

NSW Health Department, 1989, 'Maternity Services in New South Wales – The Final Report of The Ministerial Taskforce on Obstetrics Services in New South Wales (Shearman Report), State Health Publication No. (HSU) 89-007 Sydney, NSW Health Department.

Oats N & Beischer A 1986, 'Gestational diabetes', *Australian and New Zealand Journal of Obstetrics and Gynaecology*, vol 26, pp 2-10.

SWSAHS 1994, 'Shaping a Healthier Future, South Western Sydney Area Health Service' C*orporate Plan* 1995-2001.

SWSAHS 2000, 'Health in South Western Sydney - An Epidemiological Profile 2000' Epidemiology Unit, Division of Public Health, South Western Sydney Area Health Service.

Sullivan JR & Shelpherd SJ 1997, 'Obstetric outcomes and infant birth weight for Vietnamese-born and Australian-born women in South Western Sydney', *Australian and New Zealand Journal of Public Health*, vol 21, pp 159-62.

Tran M, Young L, Phung H, Hillman K & Willcocks K 2001, 'Quality of health services and early postpartum discharge: Results from a sample of non-English-speaking women', *Journal of Quality in Clinical Practice*, vol 21, pp 135-43.

Whiteford LM & Szelag BJ 2000, 'Access and utility as reflections of cultural constructions of pregnancy', *Primary Care Update Obstetrics and Gynaecology*, vol 7, pp 98-104.