

# Obstetric Risks and Outcomes of Refugee Women at a Single Centre in Toronto

Tharani Kandasamy, MD, FRCSC,<sup>1</sup> Rebecca Cherniak, BArtsSc,<sup>2</sup> Rajiv Shah, MD, MSc, FRCSC,<sup>3</sup> Mark H. Yudin, MD, MSc, FRCSC,<sup>3</sup> Rachel Spitzer, MD, FRCSC<sup>4</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, University of Toronto, Toronto ON

<sup>2</sup>Department of Medicine, McGill University, Montreal QC

<sup>3</sup>Department of Obstetrics and Gynaecology, University of Toronto, St. Michael's Hospital, Toronto ON

<sup>4</sup>Department of Obstetrics and Gynaecology, University of Toronto, Mount Sinai Hospital, Toronto ON

## Abstract

**Objectives:** Women who are refugees during pregnancy may be exposed to homelessness, poor nutrition, and limited access to health care, yet the pregnancy outcomes of this vulnerable population have not been systematically evaluated. We undertook a study to determine the risk of adverse obstetric and perinatal outcomes among refugee women in Toronto.

**Methods:** Using a retrospective cohort design, we examined pregnancy outcomes for refugee and non-refugee women delivering at St. Michael's Hospital in Toronto, between January 1, 2008, and December 31, 2010. The primary outcome measures were preterm delivery (< 37 weeks' gestational age), low birth weight (< 2500 g), and delivery by Caesarean section.

**Results:** Multiparous refugee women had a significantly higher rate of delivery by Caesarean section (36.4%), and a 1.5-fold increase in rate of low birth weight infants when compared with non-refugee women. In subgroup analysis by region of origin, women from Sub-Saharan Africa had significantly higher rates of low birth weight infants and Caesarean section than non-refugee control subjects. Further, compared with non-refugee control subjects, refugee women had significantly increased rates of prior Caesarean section, HIV-positive status, homelessness, social isolation, and delays in accessing prenatal care.

**Conclusions:** Refugee women constitute a higher-risk population with increased rates of adverse obstetric and perinatal outcomes. These findings provide preliminary data to guide targeted public health interventions towards meeting the needs for obstetric care of this vulnerable population. Recent changes to the Interim Federal Health Program have highlighted the importance of identifying and diminishing disparities in health outcomes between refugee and non-refugee populations.

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## Résumé

**Objectifs :** Pendant la grossesse, les réfugiées pourraient être exposées à l'itinérance, à des carences alimentaires et à un accès limité aux soins de santé, et pourtant, les issues de grossesse que connaît cette population vulnérable n'ont pas fait l'objet d'une évaluation systématique. Nous avons entrepris de mener une étude visant à déterminer le risque de constater des issues obstétricales et périnatales indésirables chez les réfugiées de Toronto.

**Méthodes :** Au moyen d'un devis d'étude de cohorte rétrospective, nous nous sommes penchés sur les issues de grossesse connues par les réfugiées et les non-réfugiées ayant accouché au *St. Michael's Hospital* de Toronto entre le 1<sup>er</sup> janvier 2008 et le 31 décembre 2010. Les critères d'évaluation primaires ont été l'accouchement préterme (âge gestationnel < 37 semaines), le faible poids de naissance (< 2 500 g) et l'accouchement par césarienne.

**Résultats :** Les réfugiées multipares présentaient un taux considérablement accru d'accouchement par césarienne (36,4 %) et un taux de nouveau-nés de faible poids de naissance équivalant à une fois et demie celui qui était associé aux non-réfugiées. Dans le cadre d'une analyse de sous-groupe par région d'origine, nous avons constaté que les femmes d'Afrique subsaharienne présentaient des taux considérablement plus élevés de césarienne et de nouveau-nés de faible poids de naissance que ceux des non-réfugiées (groupe témoin). De surcroît, par comparaison avec ces dernières, les réfugiées présentaient des taux considérablement accrus d'antécédents de césarienne, de séropositivité pour le VIH, d'itinérance, d'isolement social et de délais pour ce qui est de l'accès aux soins prénataux.

**Conclusions :** Les réfugiées constituent une population exposée à des risques élevés qui présente des taux accrus d'issues obstétricales et périnatales indésirables. Ces constatations offrent des données préliminaires qui permettent d'orienter la mise en œuvre d'interventions de santé publique ciblées visant à répondre aux besoins de cette population vulnérable en matière de soins obstétricaux. Les récentes modifications qui ont été apportées au Programme fédéral de santé intérimaire ont souligné l'importance de l'identification et de l'atténuation des écarts constatés en matière d'issues de santé entre les populations réfugiées et non réfugiées.

## INTRODUCTION

Between 2007 and 2011, 1.27 million migrants entered Canada.<sup>1</sup> Approximately 10% of these migrants were refugees, who have been observed to have lower levels of health than their immigrant and native-born counterparts.<sup>1,2</sup> The poorer health status of refugees, who by definition were forcefully displaced, is mediated by multiple factors including socioeconomic characteristics (ethnicity, gender, income, education, and occupation) as well as living conditions and access to health services.<sup>3</sup> Women are particularly vulnerable as they are more likely to have additional barriers to health care access including limited language proficiency, social isolation, and poverty.<sup>4,5</sup> Documented refugee claimants to Canada have access to health services through the Interim Federal Health Program (IFHP). Recent changes to the IFHP that decreased coverage for antenatal, intrapartum, and postpartum care in particular subsets of pregnant refugee women (rejected refugee claimants and those from designated countries of origin) create added ambiguity in care, and place this vulnerable population with increased risk of maternal morbidity at even greater peril.<sup>6-8</sup>

In a study of 7234 deliveries at the same inner city hospital as the current study, Shah and colleagues found that foreign-born women had a significantly higher risk than Canadian-born women of having low birth weight infants (OR 1.92; 95% CI 1.29 to 2.85) and delivery by Caesarean section (OR 1.16; CI 1.01 to 1.34).<sup>9</sup> Refugees are a unique subset of migrants who are at increased risk of adverse health outcomes.<sup>3,9</sup> During pregnancy, refugee women may be exposed to violence, homelessness, poor health and nutrition, and limited access to health care resources.<sup>3,5</sup> Yet there is a paucity of Canadian data documenting the pregnancy risks and outcomes of this vulnerable population. The goal of this study was to address this knowledge gap and to determine the risk of adverse obstetric and perinatal outcomes among Toronto's refugee population.

## METHODS

Using a retrospective cohort design, we examined the birth outcomes of refugee and non-refugee women who had singleton live-born deliveries at St. Michael's Hospital in Toronto between January 1, 2008, and December 31, 2010. St. Michael's Hospital is an academic hospital fully affiliated with the University of Toronto and predominantly serving an inner city population in an ethnically diverse region. The hospital has approximately 3000 deliveries per year and is equipped with a level II nursery. It provides obstetric care to all women who are permanent residents, landed

immigrants, or refugees in Ontario, whether or not they have a valid provincial health card number or other form of health insurance.

The primary outcome measures were preterm delivery (< 37 weeks' gestational age), low birth weight infants (less than 2500 g) and delivery by CS. Secondary outcomes included maternal medical comorbidities, timing of prenatal care, homelessness, and documented poor social supports. For this study, we defined "late to prenatal care" as having an initial documenting visit in our centre beyond 20 weeks' gestational age. "Homelessness" was defined as the listing of a homeless shelter as primary residence.

All live singleton births from January 1, 2008, to December 31, 2010, were included in the study. Women were excluded if delivery occurred outside of hospital and if the pregnancy was a second pregnancy during the study period. Multiple gestations and stillbirths were also excluded. Refugee women were identified by their use of the IFHP, which was a searchable variable in the hospital's registration database. Once refugee women who delivered at the hospital during the study period were identified, the subsequent singleton live birth was used to create the non-refugee control cohort. All non-refugee women were grouped together to form the control group, including immigrants, permanent residents, and Canadian citizens (both Canadian-born and foreign-born). Patients' demographic and socioeconomic characteristics and medical and obstetrical history were extracted from the official Ontario antenatal forms, labour and delivery record, and refugee claimant status papers. Refugee women were grouped into region of origin according to the World Bank Classification (Appendix). Country of origin data were not available for the non-refugee women who were not born in Canada.

All statistical analysis was performed using Microsoft Excel (Microsoft Corp., Redmond WA). Descriptive statistics were calculated for maternal age, gravidity, parity, and housing status. Maternal and infant characteristics were presented as a mean or rate. Two group *t* tests were used to compare means of refugee and non-refugee women. Chi-square tests were used to examine two-way associations between categorical variables. *P* values < 0.05 were considered significant.

The study protocol was reviewed and approved by the St Michael's Hospital Research Ethics Board.

## RESULTS

Between January 2008 and the end of December 2010, there were 8811 deliveries at St. Michael's Hospital, of which 3.2% (*n* = 282) involved refugee women. Of the

282 refugee women, 274 were included in the study after implementation of the exclusion criteria noted above, and each was matched to a control. Of the 274 control subjects, one was excluded because of incomplete labour and delivery records.

The characteristics of the study population are shown in Table 1. The refugee women were younger and predominantly multiparous compared with the control group. Refugee women had a significantly higher rate of being single (31.0% vs. 20.9%). The overall homelessness rate among refugee women was significantly higher than in the control group (12% vs. 1.5%;  $P < 0.001$ ).

A comparison of control and refugee women with respect to obstetrical history and medical and psychosocial comorbidities that are potential risk factors for adverse pregnancy outcomes is shown in Table 2. Refugee women had a higher rate of previous CS (21.5% vs. 12.8%;  $P = 0.007$ ), and were significantly more likely than control subjects to be HIV-positive (3.6% vs. 0.4%;  $P = 0.006$ ). The rates of homelessness and poor social support were six to eight times lower in the control subjects (1.5% and 1.8%, respectively) than in the refugee women (12.0% and 11.7%, respectively). Five times as many refugee women (10.2%) as non-refugee women (1.8%) attended their initial prenatal visit after their second trimester.

A comparison of the obstetric and perinatal outcomes of the refugee and non-refugee groups is shown in Table 3. The rate of preterm delivery was similar between the groups. Low birth weight infants  $< 2500$  g occurred more frequently in the refugee population than in the control subjects (4.4% vs. 2.9%), but this difference did not reach statistical significance.

The rate of CS was examined for all the women in both groups and for the subgroups of primiparous and multiparous women. A significant difference was observed in subgroup analysis of the multiparous group, with refugee women having a significantly higher rate of CS than the non-refugee women (36.5% vs. 22.9%;  $P = 0.014$ ). Of multiparous women who delivered by Caesarean section, 80% ( $n = 44$ ) of the refugee women and 86.7% ( $n = 26$ ) of control women had had a prior CS. The vaginal birth after Caesarean rate (approximately 25%) was comparable in both groups.

The obstetric and perinatal outcomes of refugees by region of origin and a comparison of each sub-category with the outcomes of the control group are shown in Table 4. The three regions from which the highest number of refugees originated were Group 1 (Latin America and the

Caribbean) 54.0%, Group 5 (Sub-Saharan Africa) 23.4%, and Group 7 (East Asia and the Pacific) 12.4% (Figure). Refugees from Sub-Saharan Africa had a significantly higher risk of low birth weight infants than the control group (9.4% vs. 2.9%,  $P = 0.020$ ).

With respect to delivery by CS, women from Sub-Saharan Africa had significantly higher rates than control subjects. In sub-group analysis, primiparous women from Sub-Saharan Africa were found to have a CS rate more than double that of the control subjects (50% vs. 24.6%;  $P < 0.001$ ).

## DISCUSSION

Reducing disparities in pregnancy outcomes between refugee and non-refugee women is an important public health goal. In the current study of obstetric and perinatal outcomes at an inner-city hospital in Toronto, we found that refugee status conferred increased risks in these areas. These risks varied by region of origin, with women from Sub-Saharan Africa constituting a higher risk population. When compared with non-refugee control subjects, refugee women in our study had a 1.5 times greater rate of having low birth weight infants, with women from Sub-Saharan Africa having a significantly increased risk. There was no difference in the rate of preterm delivery. Multiparous refugee women had significantly higher rates of delivery by CS than the control group. In subgroup analysis by region of origin, primiparous refugee women from Sub-Saharan Africa had a rate of CS double that of non-refugee primiparous women. Women from Sub-Saharan Africa also had significantly higher rates of prior CS and HIV-positive status than non-refugee control subjects. These findings support recommendations that women from this region be offered additional supports and/or more targeted interventions because they may be at higher risk for poor perinatal outcomes.<sup>9</sup>

Our findings are similar to those of Gagnon and colleagues, who found a higher risk of CS among newly arrived immigrants.<sup>6</sup> In their comparison of Canadian-born women and foreign-born women, Shah and colleagues found that foreign-born women had a greater risk of having low birth weight infants and delivery by CS.<sup>9</sup> They also found that the foreign-born population, consisting of both immigrants and refugees, had a non-significantly lower risk of preterm birth and suggested that this may in part be related to the “healthy migrant effect.”<sup>9</sup> We did not find such a trend towards a protective effect on preterm birth in our refugee population, highlighting the complex relationship between migration status and pregnancy outcomes and the interplay of multiple factors including the baseline health risks and

**Table 1. Characteristics of refugee women**

Characteristics	Control subjects (n = 273) n (%)	Refugee (n = 274) n (%)	P
Age, years			< 0.001
Mean	31.4	28.70	
< 20	9 (3.3)	12 (4.3)	
20 to 34	173 (63.3)	216 (78.8)	
≥ 35	91 (33.3)	46 (16.8)	
Marital status			0.003
Married/common law	195 (71.4)	157 (57.3)	
Single	57 (20.9)	85 (31.0)	
Unknown	21 (7.7)	32 (11.7)	
Homelessness	4 (1.5)	33 (12.0)	< 0.001
On social assistance	2 (0.7)	34 (12.4)	< 0.001

**Table 2. Risk factors for adverse pregnancy outcomes**

Characteristics	Control subjects (n = 273) n (%)	Refugee (n = 274) n (%)	P
Pregnancy history			
Prior CS	35 (12.8)	59 (21.5)	0.007
Previous preterm delivery	15 (5.5)	19 (6.9)	0.486
Previous low birth weight baby	16 (5.8)	17 (6.2)	0.866
Medical comorbidities in current pregnancy			
Gestational diabetes	22 (8.1)	13 (4.7)	0.113
Hypertension in pregnancy	18 (6.6)	14 (5.1)	0.460
HIV-positive	1 (0.4)	10 (3.6)	0.006
Depression	17 (6.2)	18 (6.6)	0.861
Smoking	17 (6.2)	13 (4.7)	0.446
Psychosocial comorbidities in current pregnancy			
Late prenatal care	5 (1.8)	28 (10.2)	< 0.001
Poor social support	5 (1.8)	32 (11.7)	< 0.001
Abuse	4 (1.5)	10 (3.6)	0.104

the specific characteristics of the refugee and non-refugee populations, such as maternal ethnicity, socioeconomic status, and country of origin.<sup>10</sup>

It should be emphasized that there is a significant genetic and ethnic predisposition to perinatal outcomes, such as low birth weight infants.<sup>9,10</sup> To our knowledge, this is the first study to examine specifically the perinatal risks and outcomes of refugee women in Toronto, an ethnically diverse city. While a major strength of our study is that we were able to perform subgroup analysis based on the country of origin of the refugee population, we were limited in our ability to obtain similar details regarding

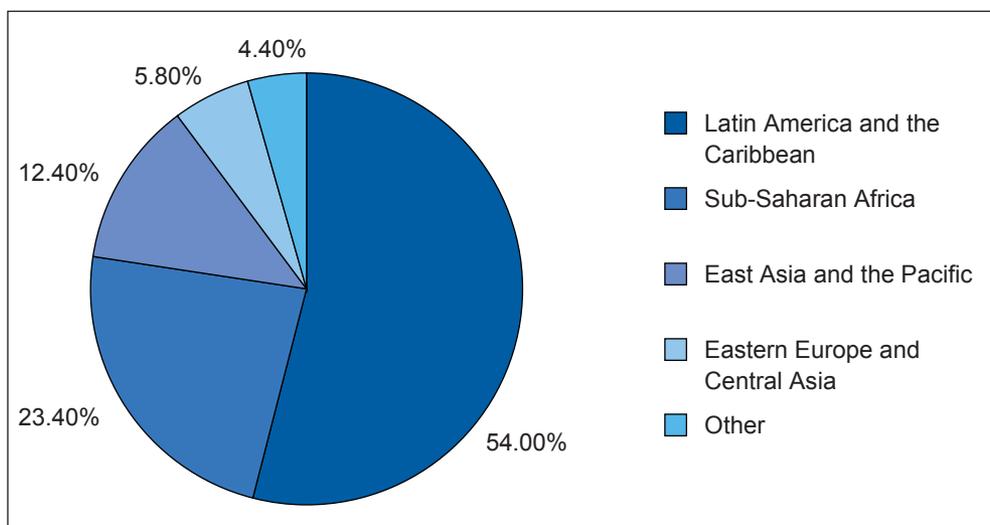
our non-refugee population's ethnic background and migration status. The grouping together of all the non-refugee women for analysis may have affected our results. Further, we identified refugee women in our study on the basis of their use of IFHP; this approach excluded other refugee women who might have been uninsured and not receiving any care under the IFHP and might have been at risk of even greater adverse outcomes.

It is also possible that the lack of differences noted in certain low frequency outcomes in our study may have been due in part to insufficient sample size. In

**Table 3. Obstetric and prenatal outcomes**

Outcome	Control subjects (n = 273) n (%)	Refugee (n = 274) n (%)	P
Gravidity			0.151
1	96 (35.2)	86 (31.4)	
2	92 (33.7)	81 (29.6)	
> 2	85 (31.1)	107 (39.1)	
Parity			< 0.001
0	142 (52.0)	123 (44.9)	
1	93 (34.1)	82 (30.0)	
> 1	38 (13.9)	69 (25.2)	
Caesarean section	65 (23.8)	85 (31.0)	0.059
Primiparous women	(n = 142)	(n = 123)	
Caesarean section	35 (24.6)	30 (24.4)	0.961
Multiparous women	(n = 131)	(n = 151)	
Caesarean section	30 (22.9)	55 (36.4)	0.014

**Refugee region of origin**



addition to significantly higher rates of low birth weight infants among refugee populations, other studies have also reported findings of significantly higher rates of depression and abuse in this group.<sup>3,5,11-14</sup> With respect to risk factors for adverse perinatal outcomes, we did not find a significant difference in the rates of depression or history of abuse, or any differences in rates of gestational hypertension and gestational diabetes. Other studies have found that refugee women are likely to have undiagnosed conditions; even if health conditions are known, refugee women are likely to under-report certain conditions because of a mistrust of the health care system and/

or fear of loss of status in the country if they disclose past health concerns.<sup>3,5,6</sup> Future larger-scale studies with further stratification including immigration status and country of birth are needed for a better understanding of the associations between refugee status and adverse perinatal outcomes and risk factors.

In our study, we found that delays in receiving prenatal care were five-fold greater in the refugee population than in non-refugee control subjects. Although all the refugee women in our study had insurance coverage for obstetric care under IFHP at the time of delivery, it is

possible that they may not have had coverage during the antenatal period because of delays in processing IFHP. Further, lack of awareness of these services, difficulties in finding physicians who accept IFHP patients, language barriers, and social isolation have all been shown to be associated with decreased use of health services in refugee populations.<sup>5,9</sup> Although data regarding language competencies and the need for interpreter services were not available in our study, analysis of other psychosocial risk factors revealed that refugee women in our study had significantly greater rates of homelessness, poor social support, and dependence on social assistance than non-refugee women. These are important findings, because there is emerging evidence that women who are homeless and women who report a lack of psychosocial supports constitute a high-risk obstetric population, with increased rates of adverse perinatal outcomes including low birth weight, small for gestational age, and preterm delivery.<sup>15,16</sup> With the recent changes to the IFHP including the decrease in obstetric services covered under the program, as well as the decrease in preventive health coverage to certain populations (such as those from designated countries of origin), inequities and lack of access to care within our system are likely to increase.<sup>7</sup> Further research in this area is needed to better understand how these psychosocial risk factors and health systems barriers affect obstetric outcomes in the refugee population.<sup>3,5,9</sup>

**CONCLUSIONS**

Preventing adverse maternal and perinatal outcomes among refugee women and understanding how migration and socioeconomic factors mediate these effects are significant public health goals. To our knowledge, our study is the first to systematically evaluate the obstetric outcomes and risk factors of refugee women in Toronto whose care is covered by the IFHP. We found that multiparous refugee women had higher rates of delivery by Caesarean section than non-refugee women. Further, in comparison with non-refugee control subjects, refugee women in our study had increased rates of prior CS, HIV-positive status, homelessness, poor social supports, and delays in accessing prenatal care. All these factors have been found to be associated with adverse obstetric and perinatal outcomes, and highlight the fact that refugee women constitute a high-risk population requiring targeted interventions to improve maternal and newborn outcomes. Recent changes to the IFHP have decreased coverage for obstetric services to some groups of refugee women. Further research is needed to identify the impact of refugee status and this recent Canadian public policy change on the health of pregnant women and to ensure that the health care needs of this vulnerable population are met.

**Table 4. Obstetric and perinatal outcomes by region of origin of refugees**

Outcome	1		2		3		4		5		6		7	
	n = 148	P	n = 4	P	n = 16	P	n = 1	P	n = 64	P	n = 5	P	n = 34	P
Control subjects n = 273														
Preterm delivery (< 37 weeks)	14 (5.1)	0.491	0 (0.0)	0.642	1 (6.3)	0.844	0 (0.0)	0.816	5 (7.8)	0.402	0 (0.0)	0.603	0 (0.0)	0.064
Low birth weight (< 2500 g)	8 (2.9)	0.800	0 (0.0)	0.728	0 (0.0)	0.487	0 (0.0)	0.862	6 (9.4)	0.020	0 (0.0)	0.698	1 (2.9)	0.997
Caesarean section	65 (23.8)	0.466	1 (0.3)	0.956	3 (18.8)	0.643	0 (0.0)	0.576	31 (48.4)	0.000	1 (0.2)	0.843	9 (26.5)	0.732
Primiparous women	n = 142	n = 67	n = 2	n = 2	n = 13	n = 13	n = 0	n = 0	n = 26	n = 26	n = 0	n = 0	n = 14	n = 14
Caesarean section	35 (24.6)	0.400	0 (0.0)	0.419	3 (23.1)	0.900	0 (0.0)	—	13 (50.0)	0.009	0 (0.0)	—	1 (7.1)	0.138
Multiparous women	n = 131	n = 81	n = 2	n = 2	n = 3	n = 3	n = 1	n = 1	n = 38	n = 38	n = 5	n = 5	n = 20	n = 20
Caesarean section	30 (22.9)	0.096	1 (50.0)	0.368	0 (0.0)	0.347	0 (0.0)	0.586	18 (47.4)	0.003	1 (20.0)	0.879	8 (40.0)	0.101

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## APPENDIX.

## COUNTRY GROUPINGS FOR ANALYSIS BASED ON WORLD BANK CLASSIFICATIONS

Group	Region	Countries
1	Latin America and the Caribbean	Argentina, Antigua, Barbados, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua Panama, Paraguay, Peru, St. Kitts/Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad, Uruguay, Venezuela
2	Western Europe/USA/Japan/ Australia and New Zealand	All European countries other than those mentioned in group 3, Australia, Japan, New Zealand, United States of America
3	Eastern Europe and Central Asia	Albania, Armenia, Azerbaijan, Bosnia, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kosovo, Latvia, Lithuania, Poland, Romania, Russia, Serbia, Slovakia Turkey, Ukraine, Uzbekistan
4	Middle East and North Africa	Algeria, Bahrain, Egypt, Gaza, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Yemen
5	Sub-Saharan Africa	All countries in Africa other than those mentioned in group 4
6	South Asia	Afghanistan, Bangladesh, India, Maldives, Nepal, Pakistan, Sri Lanka
7	East Asia and the Pacific	Cambodia, China, Indonesia, Laos, Malaysia, Mongolia, North Korea, all countries of the Pacific Islands not mentioned in other groups Papua New Guinea, Philippines, Singapore, South Korea, Thailand, Timor, Vietnam