

Chapter 4

Conclusions and Discussion

This chapter summarizes the main results of the two studies included in Chapter 3.

The first section of this chapter summarizes the overall findings. The second section discusses the implications of the studies. In addition, limitations and suggestions are given in the last section.

4.1 Overall findings

The first study involved a method for assessing complication-based risk factors for neonatal morbidity using a sample of deliveries from the major hospital in Pattani Province. This is a novel method for estimating neonatal morbidity based on complications recorded to mothers by birth attendants in the labour room. The method could be important because the only other widely used methods for estimating neonatal morbidity are based on the (a) the mother's reproductive and antenatal care history, and (b) factors such as birth weight, Apgar scores and possibly blood test results recorded during the mother's confinement. Complications observed during labour can provide additional information and are usually recorded in patient records, but there is no system currently routinely used for estimating an overall morbidity risk based on the information they provide.

In this study, we used a formula for assessing the severity of complications based on the expert opinions of a panel of obstetricians, and thus were able to provide a single index of morbidity risk by applying this formula to an observed complication.

We then validated this index thus created by correlating it with two other neonatal morbidity indicators: 1-minute Apgar score (grouped into six severity levels), and birth weight (grouped into three severity levels). Our study showed strong agreement between our new complication-based morbidity index and each of these conventional measures of neonatal morbidity.

The most prevalent complications observed were cephalo-pelvic disproportion (64%) and second breech presentation (37%).

We used logistic regression analysis to develop a model for measuring the association between our complication-based neonatal morbidity index and demographic factors associated with the mother, namely, religion (Islamic or other), age group, location of residence, occupation, education, number of previous births, and financial year.

The most important *independent* risk factors (that is, adjusted for other factors) were Islamic religion (higher risk), age (higher risk for older mothers), number of previous births (highest risk for first birth, lowest for second birth), education (increased risk with lower and unrecorded education status), and location of residence (higher risk in rural areas).

Figure 4.1 shows 95% confidence intervals for the adjusted probabilities of high risk to the baby with respect to the various levels of each of the six risk factors (excluding financial year, which did not show a statistically significant trend). This graph may be compared with Figure 3.1, which shows the corresponding crude (*unadjusted*) percentages.

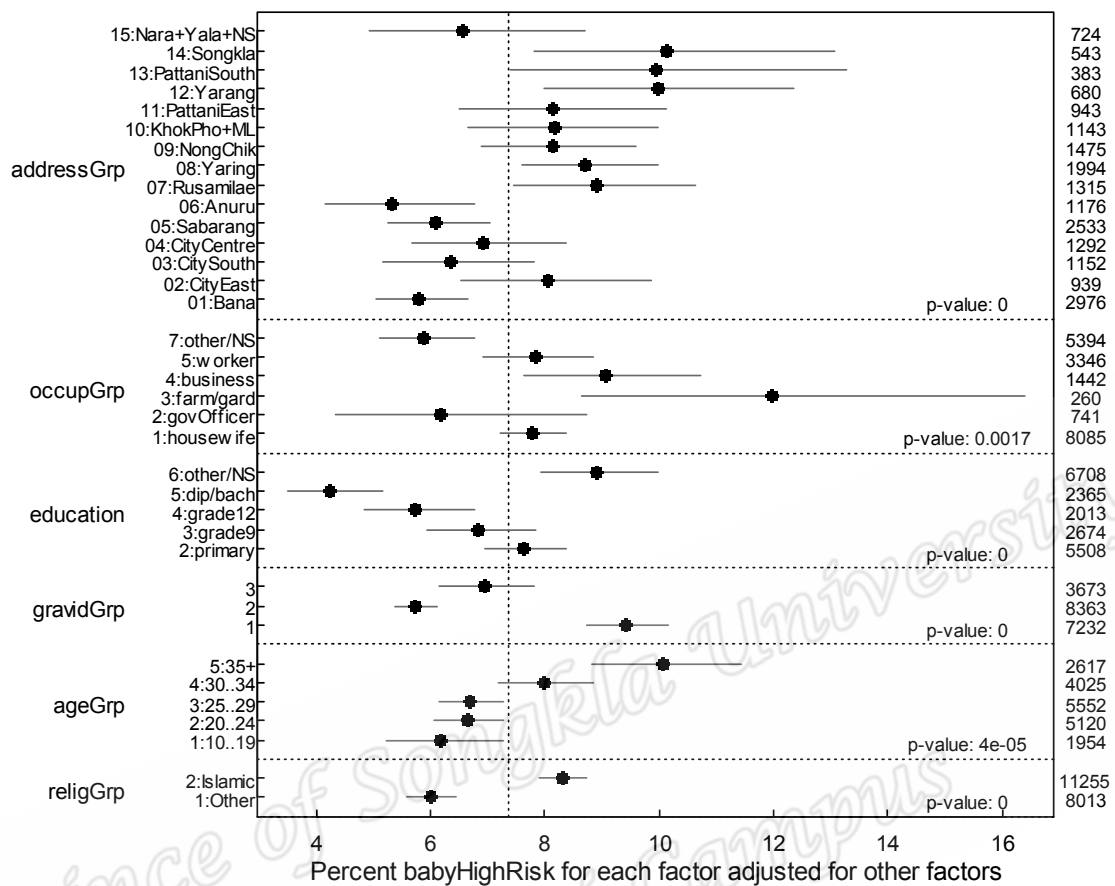


Figure 4.1: 95% confidence intervals for the adjusted probabilities of high risk

Apart from the fact that babies born to Muslim mothers are at higher risk, a result for which few if any previous studies exist, these findings are consistent with previous studies. The higher risk found among rural residents is consistent with a European study finding that rural populations have higher maternal and perinatal mortality than corresponding urban populations (WHO 2005). Our finding that older mothers had higher risks is consistent with results reported by Uma (2006) and Srisomboon (1994). The Public Health of University of California (1994) study found that women who had completed senior high school were at lower risk than others. Mothers delivering for the first time were at higher risk than others, and this result agrees with a study conducted by Islam et al (2004). We also found that women who were farmers

and gardeners comprised only a small proportion of the study sample but had higher risk of complications.

We found that our complication-based index was strongly associated with birth weight and Apgar score at 1 minute. In addition, we were able to identify a constellation of pregnancy clinical signs and symptoms of severe illness with a high level of validity in the newborn routinely, based on complications and demographic factors.

From the second study we found that Islamic women were less likely to give birth by caesarean section and older mothers were more likely to give birth by caesarean section. Because failure to have a caesarean section birth where necessary increases the risk of a complication, this finding could explain to some extent the conclusion from the first study that Muslim mothers had higher risks. Older mother had higher caesarean section. This agrees with conclusions by Gomes et al (1999), Leeb et al (2005), Lin and Xirasagar (2005), Choobun and Tintara (2000) and Guilherme et al (2000). There was also an association between higher education and caesarean section. The same association was reported by Koc (2003). Our finding that mothers in residential areas had a higher rate of caesarean section contrasts with the a conclusion of Chen et al (2008) that higher urbanization is associated with greater caesarean section rate, but this anomaly could possibly be explained by a tendency for urban women in Pattani to travel to Hat Yai to give birth. Occupation was found to be associated with caesarean section for only two groups, namely new cases of first pregnancies and new cases with no previous caesarean births. This finding is consistent with that reported by Zhang et al (2008), who found that a woman's

occupation was associated with a higher rate of caesarean delivery on maternal request.

There was only a small association between year and caesarean section rate; there was a trend of a slight increase from 1997, with a peak in 2002 and a decreasing trend after that, with the rate ranging from 30.5%-38.8%. However, the rate of caesarean delivery in Pattani Hospital is still higher than that given by the World Health Organization, which recommends the rate should not go above 15% in any country and that rates within the range 5% to 10% are preferred (Arjun 2008).

4.2 Implication of the results

From first study, we would like to recommend, in accordance with our findings the following.

Public Health workers need to be trained to screen for the risk factors associated with neonatal morbidity and caring of pregnant women and especially those who have risk criteria. Guidelines need to be developed for establishing delivery assistance to be provided in the screening of pregnant women. In addition, the birth attendants, village midwives and health workers should improve their knowledge gaps and develop competency for assessment of clinical risk complications, induced deliveries and postpartum care. This means that they should have gained the knowledge and experience with pregnancies and deliveries and they should understand how to arouse women's awareness and understanding about abnormal deliveries.

There is a need for an orientation from expert in obstetrics for assessment procedure attention during pregnancy and delivery, specifically for severe complications

including severe pregnancy-induced hypertension, eclampsia and thick meconium stain.

It is well documented that antenatal care in pregnant women by a trained birth attendant can reduce infant deaths. There is a perception that pregnancy complications are low risk. Therefore, education during the pregnancy period to provide awareness of possible complications and proper assessment is essential.

If the above recommendations are implemented, pregnant women will get a good quality service and decrease the incidence of maternal mortality and infant mortality in Pattani Province.

The next study having full coverage and a review of deliveries at home and at community hospitals should be carried out, so that the data would then fully represent all deliveries in the study area.

For second study, in any further studies it should be in-depth interviews and comparison with other religions. These would provide more information regarding this topic of interest. We should be concerned about maternal requests for unnecessary caesarean delivery instead of a vaginal birth. The lack of knowledge for pregnant women should be addressed: they should discuss the risks and benefits and options in detail with their doctors. Concern about pain is usually not a good reason to request caesarean section. Safe and effective pain management methods are available to help women cope with vaginal delivery. In addition, we expect that our findings and recommendations arising from this study could be useful in establishing a plan and policies for reducing unnecessary caesarean section delivery. Especially, if we can decrease the rate for caesarean delivery it will save governments the costs of

treatment provided by the health system. This is because caesarean deliveries are associated with longer hospital stays and greater risk of maternal morbidity and their newborns.

4.3 Limitations and suggestions for further study

With respect to the first study, the questionnaire form given to the expert obstetricians was not as clear as it could be, and thus it was difficult for them to give a score and we did not classify data collection of complication in pregnant women into the three periods: during pregnancy, during deliveries or post delivery. We did not set a standard and simply defined a score ranking from zero to nine (0-9).

These complications were based on information in the database of Pattani Hospital. The average of each complication was a different range and there were disagreements in score from each of the 11 assessors. Some of the complications were not necessary to weight a risk score such as dead fetus in utero and anencephalus because the obstetricians knew the new born would not survive. On the other hand the database of maternal deliveries about sickness before pregnancy was not available. For these reasons it made it complicated to predict for new-borns. In addition, items identified by experts are rather heterogeneous in nature. Some are biological and difficult to control such as prolapsed cord. Some are due to poor access to care such as VDRL positive (Venereal Disease Research Laboratory). Some are highly related to each other such as cephalo-pelvic disproportion and prolonged labour (1st and 2nd stages). The frequency of these problems was varying.

For second study, the weaknesses of data for the group comprising subsequent pregnancy and previous caesarean and referred or transferred, the sample size was

quite small and the associations were less evident. The confidence intervals were thus not accurate in comparison with other groups in this study.

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