



## CHAPTER V

### DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Relationship between anemia in pregnancy and postpartum hemorrhage was examined in this case-control study. Cases were those who have a postpartum hemorrhage history, and controls were those who do not have a postpartum hemorrhage history. The period of data collection was from December 2002 to January 2003 using the patients' medical records from 1998 to 2002 as data sources. The 250 subjects who met inclusion and exclusion criteria were selected to be subjects for this study. The data analysis was performed. Based on the results, discussion, conclusion and recommendations are presented in this chapter.

#### A. Discussion

Most of the subjects were in the age range between 20-35 years. This is a reproductive period, which was recognized as the safest period in women's reproduction cycle to get pregnant and deliver babies. In this period the women are believed to have the best conditions for reproduction, physically and mentally. Outside of this age range is considered as high risk. The findings indicated that the "cases" group consisted of more subjects older than 35 years. Majority of the subjects received grade 5-6 of elementary school education both in "cases" and "controls" groups. It indicated that the general educational level of the subjects was at moderate level. For the occupation, in the "controls" group housewife was the majority (42%) followed by unskilled labor (36%) but in "cases" group, unskilled labor was the majority (34%) followed by housewife (32%). This finding indicated

that between the two groups the subjects' social status was almost the same; they came from the middle lower class.

Regarding prenatal period, the findings indicated that majority of the subjects' gravidity was 2 to 4. This number of gravidity is considered as low risk pregnancy. In contrast, the first pregnancy and more than four pregnancies constitute high risk because in the first pregnancy, physiologically and psychologically the women are still inexperienced and may not be ready to face the challenges of pregnancy. On the other hand, more than four pregnancies usually deal with some problems associated with old age problem, such as weakness and exhaustion. The "cases" group women differed from the "controls" group with regards to gravidity of more than 4 (6% vs. 0.5%, respectively) and gravidity may affect postpartum hemorrhage. Therefore, gravidity became an important confounder and needed to be considered when analyzing the relationship between anemia and postpartum hemorrhage.

For place of ANC, more than half of subjects went to hospital in both "cases" and "controls" group. This findings indicated that most of the subjects could afford to attend ANC in the hospital. In terms of frequency of ANC, more subjects in the "control" group attended ANC more frequently than the "cases" group. Some of services during ANC were physical and laboratory examinations to ensure the health status of the women and provision of treatment or health education to improve their health status, preparation for delivery and prevention of complication. Therefore, frequency of attending ANC may have an influence on the outcome of the pregnancy including delivery outcomes and this result was found in this study. More subjects in the "cases" group (4%) experienced pre-eclamsia complications.

Regarding intra-natal period, the parity of the subjects was not much different from the gravidity, the only difference was about their maximum value, which was higher in gravidity due to some patients who might have abortion history in the previous pregnancies. For type of labor, majority of subjects delivered with spontaneous together with episiotomy, both in “cases” and “controls” groups. There was a higher percentage in “cases” group who delivered with spontaneous and with vacuum extraction.

Duration of labor has a wide of range, and it could be due to the diversity of completeness of the medical records. The study traced back the subjects for five years. Thus, there’s a high possibility for the recording and reporting techniques to change during that period. The duration of labor among subjects were mostly less than 8 hours both in “cases” and “controls” groups. There was a big difference in oxytocics drug administration during the third stage of labor, which was 92% in “cases” group and only 25.5% in “controls” group. It demonstrated that in the hospital, oxytocics drug administration was given for certain indication, not for prophylaxis or prevention purpose as it is usually prescribed. Therefore, including this information indicated that theoretically the oxytocics drug administration as an independent variable may lead to incorrect explanation.

Regarding baby weight, majority of the subjects had baby with 2500 to 4000 grams of weight both in “cases” and “controls” groups. For birth attendant, 75% of the “controls” group were attended by nurses, while in “cases” group 62% were attended by doctors. However, one cannot conclude that doctors caused hemorrhage more than nurses. One possible explanation was that subjects with high risk condition(s) were assigned to be delivered by physician rather than nurses. Another

explanation was, even though initially nurse attended the delivery, but when the pathological sign appeared, the doctor was called in. Therefore, there were more “cases” attended by doctors. Pre-eclampsia was experienced by the same percentage of “cases” and “controls” group, but dystocia and retained placenta were occurred more in the “cases” group. This finding supported the literature, prolonged labor due to dystocia and retained placenta were the predisposing and the cause of postpartum hemorrhage (Gorrie, et al.,1994).

The results of the relationship among the variables in the study were in, some extent, consistent with the literature and also can provide additional information. The positive correlation between age and gravidity, age and parity, gravidity and parity explain such a logical relationship that the more age of the women, the more of gravidity. Furthermore when the women increase the gravidity then the parity will tend to increase. The other positive correlation was between baby weight and frequency of ANC. It was obvious that the more frequent of ANC, the more the women get exposed to health service and education. According to PREECEDE-PROCEED model from Green&Kreuter, health education will improve the people’s knowledge and beliefs (predisposing factors) and, in turn, will influence their health behaviour. Baby weight is one of the outcomes of good health behaviour during pregnancy, so that the finding supported the literature.

Regarding the positive correlation between baby weight and Hematocrit level, there was a similarity finding with a controlled trial study among Indian women with anemia in pregnancy, who received either iron and folic acid supplements for 100 days or no supplements. The trial reported among those receiving supplementation, the increase in birth weight was significantly related to

rise in hemoglobin level (DiGuisseppi,C, 1993). In contrast, a study findings have been reported by Meda N et al., from their prospective study in 1995, they found that severe maternal anemia and pallor of the conjunctiva were significantly associated with pre-term delivery and perinatal death, but not with low birth weight. Therefore, it was needed to have a further specific study to examine the relationship between anemia in pregnancy and baby weight.

The negative correlations between age, gravidity and parity and duration of labor revealed that the more age, gravidity and parity, the less duration of labor. However, it did not reflect too much meaning due to the variety of completeness of the medical records about duration of labor, which was one of the limitations of the study. The negative correlation between education and age reflected the difference of educational level between older women and younger women. The more educational level, the less age. Furthermore, since age has positive correlation with gravidity and parity, then education also has negative correlation with gravidity and parity.

Anemia in pregnancy may result from a variety of causes, but the most prominent among them were a lack of chemical “building blocks” for blood cells such as iron, folic acid, and vitamin B12 so that the Hemoglobin or Hematocrit percentage in the blood is less than normal. The anemia condition during pregnancy can lead to other conditions which, in turn, can cause postpartum hemorrhage. Anemia can lead to general fatigue of the woman’s body, and because of that, prolonged labor and uterine muscle exhaustion can occur. Furthermore, those conditions can lead to decision of surgical procedures/trauma, uterine atony and

retained placenta, which are recognized as the direct causes of postpartum hemorrhage.

The above results have shown that several conditions during the pre-natal and intra-natal period may lead to postpartum hemorrhage. In order to examine the effect of anemia to postpartum hemorrhage, the conditional multiple logistic regression was performed to take into consideration all the possible factors that may influence postpartum hemorrhage. The reason to use the conditional instead of unconditional multiple logistic regression was because in this study cases and controls were matched on time of delivery.

Three conditional logistic regression models were developed to indicate the magnitude of the effects of various factors on postpartum hemorrhage. Among ten independent variables tested, three variables significantly showed the effects at the level of p-value 0.05, these were age (Odds Ratio = 5.5), education (Odds Ratio = 3.3) and anemia (Odds Ratio = 2.9). In other words, the risk to experience postpartum hemorrhage were: older than 35 year-old women was 5.5 times higher than the younger age group; women with high educational level was 3.3 times higher than women with elementary educational level; anemic pregnant women was 3 times higher than non-anemic pregnant women.

Moreover, the effects of parity were significant at the level of p-value 0.1 with Odds Ratio = 2 which means that the risk of postpartum hemorrhage among women with parity >4 was twice as high as among women with parity 2 to 4, and the risk among women with parity 2 to 4 was twice as high as women with parity 1.

It was clear, when parity and gravidity were included simultaneously in the model, the levels of significance of both variables were very low. But when each of variables was tested separately in the different models, the level of significance for both variables were remarkably increased. This supported the results found in this study and in other studies in that gravidity and parity are highly correlated. Another point of the findings was that age has the strongest effect, following by education, anemia and parity. The results of this study supported the research hypothesis in that *pregnant women with anemia will face a higher degree of risk (3 times higher) of postpartum hemorrhage than pregnant women without anemia.*

The results of this study obviously indicated that anemia in pregnancy is one of predisposing factors of postpartum hemorrhage. It means that one of the alternatives to prevent postpartum hemorrhage is by providing prevention and treatment of anemia in pregnancy. On the other hand, the direct causes of postpartum hemorrhage including abnormalities of uterine contraction, retained products of conception, birth canal trauma, and abnormalities of coagulation encourage the health professionals to practice active management of labor.

However, the result of this study contrasts with the result of Dewar (1969) who found that there was no significant different in blood loss between anemic women and non-anemic women. The possible explanation for the inconsistency is that there was a different operational definition of anemia and postpartum hemorrhage between the studies. In addition, the difference of the research design and statistical analysis may also be accountable for the inconsistency

However, this study has some limitations. Since time and financial resources were limited, the study was conducted as a hospital-based research which may not be representative of all pregnant women in the community. Therefore, the results may not be generalized. Besides, there were a possibility of some bias related to the reliability of measurements due to the diversity of techniques of measurements and records. Those limitations were balanced by maintaining the quality and completeness of data carefully.

More over, the results of this study were expected to give some benefits. Firstly, as a chance for the author to improve the ability and experience in conducting public health related research. Secondly, in the context of an evidence-based practice approach, this study may provide additional scientific evidence in identifying risk factors affecting postpartum hemorrhage. And thirdly, for Uthai thani Hospital, the results may provide valuable information for the hospital improvements.

## **B. Conclusion**

Based on the findings from this study, the following conclusions were made as follows:

1. Anemia is one of the predisposing factors for postpartum hemorrhage beside age, education, and parity. The risk to experience postpartum hemorrhage among anemic pregnant women was 3 times as high as among non-anemic pregnant women.



2. Among all factors involved in this study, there were some positive and negative significant correlations between them which were consistence with the literatures.

### **C. Recommendations**

Hospital based research and purposive sampling method were used in this study. It may limit the generalizability of the findings of this study. It is recommended that further study be extended to the community with a larger sample size. In this study, the demographic and all-important factors were decided according to their availability in the medical records. It is recommended that a study may be designed in such a way to set the data according to the need of the researcher and the study it self.

Based on the findings of this study, it is strongly recommended for the public health personnel and the community to provide proper diet and iron supplementation for pregnant women, and encourage the use of family planning methods to avoid the high number of gravidity and parity and also to avoid pregnancy at the old age.