CHAPTER V

CONCLUSION AND RECOMMENDATION

There were 468 people involved in this study. It was found 51 cases of hemoglobinopathy, consisted of 12 cases of β thalassemia trait (2.6 %) and 39 cases of hemoglobin E trait (8.3 %). The other (417 people) were classified into non-hemoglobinopathy group. They were 31 cases of iron deficiency; 20 cases of iron deficiency anemia; 4 cases of microcytosis; 3 cases of polycythemia; 3 cases of echinocytosis; 2 cases of ovalocytosis; 3 cases of HPFH; 1 case of hypoplastic anemia and 369 volunteers were normal.

In general, prevalence of hemoglobinopathy in the study population was 10.9 %. It was higher than 7.5 % that was eastimated by Boon in 1983. Prevalence of hemoglobin E trait (8.3 %) was higher than β thalassemia trait (2.6 %). It can be estimated that the probability of having a baby who suffer from double heterozygous β thalassemia/ hemoglobin E is higher than that with homozygous β thalassemia.

There were 4 cases of microcytosis that might be α thalassemia trait or other thalassemia included into non-hemoglobinopathy group. For confirmation, it need the further investigation of microcytic history among their each family.

Unfortunately, it had not been done due to geographical constraint and time limitation. Therefore, the term of hemoglobinopathy in this study was limited only for β thalassemia trait and hemoglobin E trait trait and not for α thalassemia trait or other thalassemia.

Diagnostic performance of the modified O.F.T. in the 10.9 % prevalence of hemoglobinopathy is as follows : sensitivity is 86.3 %; specificity is 75.3 %; positive and negative predictive values are respectively 29.9 % and 97.8 % as well as accuracy is 76.5 %. A positive test is 3.5 times more likely to be made in the presence of hemoglobinopathy than in the absence of it (L R + = 3.5). If test result was negative, likelihood ratio for this negative test result (LR - = 0.2) was 0.2; the odds were about 1:6.1 that a negative test result would be made in the presence of hemoglobinopathy as compared to the absence of it. Pre-test odds and post-test odds are respectively 0.1 and 0.4.

It was mentioned in the primary research question that the modified O.F.T would be accepted if it had a sensitivity of at least 80 %. Lower limit sensitivity of the modified O.F.T. at 95 % confidence interval is 82.9 %. Therefore, it is acceptable and can be used as a preliminary test for screening for hemoglobinopathy.

Reliability on measurement on the modified O.F.T. was determined by Kappa value. Kappa value derived from computation was 0.82. It expresses that agreement between 2 observer is almost perfect. It also can be interpreted that the modified O.F.T. is a reproducible test.

Diagnostic performance of the previous O.F.T. in the 10.9 % prevalence of hemoglobinopathy is as follows : sensitivity is 88.2 %; specificity is 55.2 %; positive and negative predictive values are respectively 19.4 % and 97.5 % as well as accuracy is 58.8 %. A positive test was 1.96 times more likely to be made in the presence of hemoglobinopathy than in the absence of it (L R + = 1.96). If test result was negative, likelihood ratio for this negative test result (LR - = 0.2) was 0.2; the odds were about 1:7.3 that a negative test result would be made in the presence of hemoglobinopathy as compared to the absence of it. Pre-test odds and post-test odds are respectively 0.1 and 0.2.

Seventy normal people were detected by the modified O.F.T. as false positive result. It was 68 % of total false positive result whereas the previous O.F.T. showed a higher percentage i.e. 82.4 %. It means that the use of the previous O.F.T. will cost more due to unnecessary test.

All of 3 cases of echinocytosis and 2 cases of ovalocytosis were detected as false positive result by both the modified and the previous O.F.T. These 2 tests also showed false positive result to 3 of 4 cases of microcytosis. Twenty one of 51 cases of iron deficiency/iron deficiency anemia (41.2 %) were detected as false positive result by the previous O.F.T. whereas the modified O.F.T. showed a lower percentage i.e. 39.2 %.

Seven cases of hemoglobin E trait detected as false negative result by the modified O.F.T. whereas the previous O.F.T. gave false positive result to 4 cases of hemoglobin E trait and 2 cases of β thalassemia trait. In the other words that there were no cases of β thalassemia trait undetected by the modified O.F.T.

In term of detection rate, both the modified and the previous O.F.T. are significantly different ($p < 0.05$). The previous O.F.T. has a higher sensitivity than the modified O.F.T. However, the other test characteristic show that the modified O.F.T. is better.

Total bilirubin level up to 3.3 mg/dL. does not show any different compared with its normal level to influence the test result ($p > 0.05$). It is happened not only in the modified O.F.T. but also in the previous O.F.T. Another

factor should be concerned is membrane defect of erythrocyte. It was found in all of 3 cases of echinocytosis and 2 cases of ovalocytosis.

The modified O.F.T. can be used as an alternative for preliminary test to monitor the prevalence of hemoglobinopathies (β thalassemia trait and hemoglobin E trait) in a community by assuming that all of β thalassemia trait and 82 % cases of hemoglobin E trait would be detectable.

The modified O.F.T. is simple, cheap, fast and reliable. Therefore, those clinical laboratory which have limited facilities can use the modified O.F.T. as an alternative for preliminary test in order to detect hemoglobinopathy trait. Then, proceed with further investigation for definitive diagnosis in a referral laboratory for those who have a positive test result.

It will be better if the study can be continued among children population (under 14 years) as well as cost-effectiveness analysis in the adult population.