CHAPTER 7

DISCUSSION, SUGGESTIONS AND SUMMARY

7.1 Discussion and Suggestions

The economic analysis of CHWs' performance in malaria control at the village level in Bénin is developed on a methodological approach of modelling. Three models are built:

- a model for the analysis of CHWs' performance;

- a model for cost benefit analysis of the contribution of CHWs in malaria control at the village level;

- a model for cost effectiveness analysis of the contribution of CHWs in malaria control at the village level.

Some weaknesses of these models are discussed and appropriate suggestions are made in this section.

It was assumed that the garbage value of the motorcycle and other equipment to be replaced after their lifetime is zero, since it is given systematically to the health centre personnel. This assumption is quite unrealistic, since the motorcycle and other equipments still worth a value, even little. For example, a motorcycle of 300,000 francs still worth at least 50,000 francs at the end of its 5 years of lifetime. So in the implementation of the model with real data collected from the survey, the garbage value of all equipments (of health personnel and CHWs) will be deducted from the cost of equipments and added to the cost of health personnel and CHWs.

Not all CHWs will be replaced systematically at the end of the fifth year. Those who agree to continue the job will be kept in the system. So, no village assembly will be needed in villages where there are no new CHWs to be selected, and no new training cost will be needed in such villages. The inputs cost will be adjusted in each commune to fit the real situation.

Morbidity and mortality are known and accepted as the most appropriate final outcomes in the measurement of the impact of health intervention on communities (Alonso and others, 1993; Mills, 1993; Porchaiwiseskul, 1993; Walt, 1988). The models designed in this study are based on the assumption that all the changes in malaria morbidity and mortality in experimental communes are due to community health workers. This may not be necessary true if there are other external factors which can influence malaria morbidity and mortality. This issue was raised by Walt (1988, 9) according to whom while the effectiveness of a CHW programme might be best assessed by changes in mortality and

diseases prevalence in the community, it is notoriously difficult to design evaluations that can confidently demonstrate causal relationships between CHW inputs and decreases in mortality or morbidity.

Aware of that difficulty, this study used as indicators of effectiveness, not the general morbidity and mortality, but only malaria specific morbidity and malaria specific mortality. Also, in this CHWs programme, it is made sure that no known external factors come to disturb the final outcomes in both experimental and control communes. The level of care, the size of health centres and the health personnel are identical in all communes in the experimental districts. There is no other health interventions in those six districts in which experimental communes were selected, and within which the control communes are to be selected purposely. The use of insecticide-impregnated bednets and other specific malaria control programmes are experienced in other areas.

Likewise, malaria cases diagnosed by CHWs at the village level in Bénin are presumptive cases of malaria based upon fever without any other accompanying symptoms; there is no laboratory test to confirm the diagnosis of malaria at the village level. Thus, not necessarily all cases of fever will be confirmed as malaria cases. That is why the CHWs are requested to refer to health centres all cases of fever without improvement after three days of antimalarial treatment at the village level.

In the three models developed above, a special attention is to be given to the analysis of the influence of the financial formal rewards to CHWs. It may be founded by the study in real life that financial rewards has significant influence on the number of patients treated by CHWs at the village level per year. How to finance that formal financial rewards to CHWs at the village level will be the next research question focus. The willingness to pay or the willingness to contribute to the rewards deserved to be investigated in the communities beneficiaries of the contribution of CHWs.

Hypothetical data have been used in the study to test how the models work. The results of the evaluation of the approach using these hypothetical data are not to be taken as granted for policy implications.

These models will help to bridge the gap of lack of formal researches in Bénin on the issue of decentralization of health services down to the village level, that sensitive aspect of Primary Health Care/Bamako Initiative. The results of such studies will help health planners and policy makers of the Government to make a decision regarding the choice of the implication of CHWs in malaria control, but also in other common diseases control at the village level. The results of those studies can also be used in the future as starting point for further researches in the same area.

7.2 Summary

This study has designed a methodological approach to analyze with economic tools whether or not the CHWs programme implemented in all the villages of one commune per province in the overall six provinces of Bénin is economically worthwhile. If so, the programme is to be expanded all over the 517 communes including more than 3000 villages of the country. The study has two sections related respectively to the two sub-questions derived from the major one:

- how to analyze the performance of CHWs in malaria control at the village level in Bénin ?

- how to design the analysis of the cost and the outcomes (benefit and effectiveness) of the contribution of CHWs in malaria control at the village level?

Analyzing the performance of the Community Health Workers for malaria control at the village level, the study used multiple regression analysis, binary model analysis and qualitative analysis. Many factors have been identified as influencing the number of malaria patients treated at the village level per year by each one of the CHWs, used here as a proxy of the measurement of the performance of the CHWs. There are both quantitative and qualitative factors.

The quantitative factors which can have any influence on CHWs' performance are the age, the number of years of schooling, the number of years of experience as CHW, the amount of the household income per year, the number of dependents, the value of informal gift received from villagers per year, the number of supervision by the personnel of health centre per year, the number of sessions of retraining, the number of hours of daily availability for the function of CHW and the amount of formal rewards per year. They were analyzed by multiple regression method.

The qualitative factors which can have any influence on CHWs' performance are the sex, the marital status, the employment, the competence, the attitude of the villagers towards the CHW, the support from the hierarchy and any healing service before becoming CHW. The qualitative factors could be studied by the binary model analysis: linear probability model, probit model and logit model. In the evaluation of the approach with hypothetical data, the attitude of the villagers towards the CHW transformed to dummy variable with two possible values (1 if positive, 0 if otherwise) was used as dependent variable; and the number of malaria patients treated in one year used as independent variable.

Among all the factors, both quantitative and qualitative, the amount of formal rewards to the CHW per year is expected to be positively related to the number of patients treated per year. In other words, the CHWs who get some formal rewards are hypothesized to treat

more patients per year than those who get no formal rewards for that job.

Both cost benefit analysis and cost effectiveness analysis were used as economic tools to design the economic evaluation of the contribution of CHWs in malaria control at the village level.

Cost benefit analysis compared the share used for malaria control in the additional inputs needed to implement CHWs programme at the village level, and the benefit in monetary terms. The expected benefits are:

(1) the reduction of cost for treating simple malaria cases to villagers;
(2) the reduction of illness time for treating simple malaria cases to villagers;
(3) the increase in the number of malaria patients treated in the overall commune with CHWs, due to the reduction of non treatment, self treatment and other non-medical treatment.

Cost effectiveness analysis compared the share used for malaria control in the total additional inputs needed to implement CHWs programme at the village level, and the effectiveness of the programme in natural units. The expected final outcomes or health effects to be analyzed as the effectiveness of CHWs' performance for malaria control at the village level in experimental communes are:

(1) the reduction of malaria specific morbidity in villages and communes exposed to CHWs,

(2) the reduction of malaria specific mortality in villages and communes exposed to CHWs.

The results of CEA is to be expressed in cost per unit of output. For both CBA and CEA, the influence of the financial rewards to the CHWs is to be analyzed through the "behaviour" of the benefit cost ratio, and also that of cost per unit of output.

In each province, each experimental commune will be compared to a group of control selected purposively in the neighbourhood and in the same district, so as to guarantee the similarity in all characteristics except for the exposure of villagers to the CHWs.

The CHWs' performance analysis needs a cross-sectional survey for data collection from CHWs, health personnel of commune health centre or district hospital and health record in those facilities. The economic evaluation of CHWs' performance in malaria control will need a one year follow-up survey, with repeated monthly cross-sectional data collection in households, and health centres routine data collection. The household survey will be carried out in both experimental and control communes.