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## **Health implications for rural and ethnic populations: A review of community survey findings in relation to CVD risk factors and health literacy among Karen ethnic, Tak, Thailand**

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### **Abstract**

Drawing on findings from three research articles (published elsewhere) investigating health and health literacy among Karen ethnic in Thailand, this paper attempts to point out potential consequences of low health literacy among this ethnic group. We conducted this research project in Thasongyang, the westernmost district of Tak, of which its population is predominantly Karen with very low literacy rate. The findings are summarised in order to prioritise the problems and needs regarding prevention of cardiovascular diseases. We have observed very low rates of health literacy across topics under investigation. We conclude that low health literacy among this ethnic population is quite alarming and can lead to unfavourable health consequences. Language barrier is believed to contribute to health illiteracy among this ethnic population. However, we do recognise geographical difficulties and the lack of effective health communication and education program as contributing factors for such a low literacy.

**Keywords:** Health literacy, Karen ethnic, Rural and Remote

### **Introduction**

Diabetes, Hypertension and cardiovascular diseases (CVD) are growing epidemic diseases in both urban and rural communities worldwide.(1) WHO estimated that 17.3 million people die of CVDs each year and 80% of these deaths take place in low and middle income countries such as Thailand.(1-3). Thailand is facing growing burden of diabetes, hypertension and CVD.(4, 5) The CVD risk factors are differently prevalent among regions of Thailand. (6) Thus, risk factors prevalent ethnic minority could be also different from the pattern in Thai community. Rural and minority populations are increasingly exposed to life style-related risk factors of urbanization. Meanwhile, disadvantaged populations are more exposed to

# Prospective evaluation of simply modified MODS assay: an effective tool for TB diagnosis and detection of MDR-TB

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**Background and setting:** Thailand is one of the highest tuberculosis (TB)-burdened countries. Chiang Rai, the northernmost province of Thailand has high tuberculosis and human immunodeficiency virus (HIV) prevalence and the laboratory workload for TB culture and drug susceptibility testing is increasing.

**Objectives:** To evaluate the simply modified microscopic-observation drug-susceptibility assay (MODS) in the setting of a developing country.

**Methods:** In this cross-sectional diagnostic study, a total of 202 sputum samples of clinically diagnosed TB patients were used to test the performance of MODS assay in reference to gold standard BACTEC™ MGIT™ 960 liquid culture system and Ogawa solid culture. Sputum samples were collected from clinically diagnosed TB patients. Culture growth rate and time to culture positivity were compared among three methods. Performance of modified MODS assay was evaluated for detection of mycobacterium drug resistance in reference to MGIT antimicrobial susceptibility test (AST).

**Result:** Median time to culture positivity by MODS, solid, and liquid culture were 12, 30, and 6 days respectively. Compared to the drug susceptibility test (DST) result of reference liquid culture, the sensitivity and specificity of MODS for detection of multidrug-resistant tuberculosis (MDR-TB) was 85.7% and 97.5% respectively. MODS assay has a positive predictive value of 80% and negative predictive value of 96.5% for isoniazid resistance, 70% and 100% for rifampicin resistance, and 66.7% and 99.1% for MDR-TB.

**Conclusion:** MODS is a highly effective screening test for detection of MDR-TB.

**Keywords:** tuberculosis, drug resistance, MODS assay, Chiang Rai, Thailand

## Introduction

Tuberculosis (TB) is a global disease with 9.5 million reported incident cases in 2009.<sup>1,2</sup> By 2009, multidrug-resistant tuberculosis (MDR-TB) prevalence had increased and nearly half a million cases have been reported worldwide.<sup>1</sup> Thus, along with TB diagnosis, drug susceptibility testing (DST) has become an urgent clinical requirement for timely constitution of proper and effective TB treatment. However, TB diagnostic and laboratory capacity are still poor in many areas of highly TB-burdened countries.<sup>2</sup> It causes a crucial barrier for detection of human immunodeficiency virus (HIV)-associated and drug-resistant tuberculosis.<sup>3</sup>

Thailand is one of the 22 most TB-burdened countries, having an estimated 130,000 TB cases (182/100,000 population) in 2010.<sup>2</sup> It has the highest HIV prevalence in the Southeast Asian region, which was reported to affect 1.4% of the general population in 2009.<sup>3</sup> It also has the highest MDR-TB prevalence in the Southeast

STUDY PROTOCOL

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# Reducing salt intake for prevention of cardiovascular diseases in high-risk patients by advanced health education intervention (RESIP-CVD study), Northern Thailand: study protocol for a cluster randomized trial

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## Abstract

**Background:** Decreasing salt consumption can prevent cardiovascular diseases (CVD). Practically, it is difficult to promote people's awareness of daily salt intake and to change their eating habits in terms of reducing salt intake for better cardiovascular health. Health education programs visualizing daily dietary salt content and intake may promote lifestyle changes in patients at high risk of cardiovascular diseases.

**Methods/Design:** This is a cluster randomized trial. A total of 800 high-CVD-risk patients attending diabetes and hypertension clinics at health centers in Muang District, Chiang Rai province, Thailand, will be studied with informed consent. A health center recruiting 100 participants is a cluster, the unit of randomization. Eight clusters will be randomized into intervention and control arms and followed up for 1 year. Within the intervention clusters the following will be undertaken: (1) salt content in the daily diet will be measured and shown to study participants; (2) 24-hour salt intake will be estimated in overnight-collected urine and the results shown to the participants; (3) a dietician will assist small group health education classes in cooking meals with less salt. The primary outcome is blood pressure change at the 1-year follow-up. Secondary outcomes at the 1-year follow-up are estimated 24-hour salt intake, incidence of CVD events and CVD death. The intention-to-treat analysis will be followed.

Blood pressure and estimated 24-hour salt intake will be compared between intervention and control groups at the cluster and individual level at the 1-year follow-up. Clinical CVD events and deaths will be analyzed by time-event analysis. Retinal blood vessel calibers of CVD-risk patients will be assessed cross-sectionally. Behavioral change to reduce salt intake and the influencing factors will be determined by structured equation model (SEM). Multilevel regression analyses will be applied. Finally, the cost effectiveness of the intervention will be analyzed.

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