



# Associated factors with adherence to antiepileptic drug in the capital city of Lao PDR

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Received 3 July 2012; received in revised form 7 September 2012; accepted 12 October 2012  
Available online 22 November 2012

## KEYWORDS

Adherence;  
Epilepsy;  
Lao PDR;  
Intervention;  
Anti-epileptic drug

**Summary** Available medical care for epilepsy and antiepileptic drugs (AED) are provided in Vientiane Municipality by district hospitals supported by a non-governmental organization, which is referred to as a community-based intervention (CB), and reference hospital which is referred to as hospital-based interventions (HB). Identifying underlying factors of AED adherence is of public health interest.

A community-based cross-sectional survey among randomly selected patients with epilepsy (PWE) who were being cared in Vientiane Municipality was undertaken in 2010. The Morisky scale was used to assess the level of adherence. Univariate and multivariate logistic regression analyses were performed to address predictive factors.

Overall, 99 PWE were included in the study. Overall adherence was estimated at 57.6%, 57.1% and 58.0% for the HB and CB group, respectively. High level of adherence was related to illiteracy, being on monotherapy and experiencing fewer seizures.

Implementing closer medical care at primary level to PWE improves the likelihood of reducing primary and secondary treatment gap which is related to PWEs' adherence. An active

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intervention through a downstream channel of training of medical health staff from reference level to community level enhances the prescription of adequate AED, the improvement of the quality of relation between PWE and medical staff.

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## Introduction

Medication adherence refers to the act of conforming to the recommendations provided by medical health staff with respect to timing, dosage, and frequency of medication (Cramer et al., 2008). Medication adherence of people with epilepsy (PWE) is estimated to cover a wide range from 30 to 70% (Davis et al., 2008; Jones et al., 2006). High adherence to drug regimens decreases the risk of seizure relapses and results in lower annual cost of health care (Davis et al., 2008; Tan et al., 2005). Multiple factors influencing patients' adherence to AED have been described and include patient related factors or treatment and health system factors (Rikir et al., 2010). Behavioral interventions such as the use of intensive reminders and implementation intention interventions have reported positive effects on adherence of PWE (Al-Aqeel and Al-Sabhan, 2011).

Epilepsy is affecting 70 million people worldwide (Ngugi et al., 2010). In Lao People's Democratic Republic (Lao PDR), prevalence of epilepsy is estimated at 7‰ with approximately 52,000 PWE throughout the country contrasting with epilepsy care mainly available in Vientiane Municipality (Tran et al., 2006). Since 2003, interventions aiming at improving access to AED for PWE are being implemented in Lao PDR (Barennes et al., 2011). A pilot intervention in one rural district of Lao PDR, based on free AED for identified PWE, reported a low adherence to AED of 22%, with a high mortality rate among non-adherent patients (Tran et al., 2008). Transport difficulties restricting access to health facilities were identified as the main cause of non-adherence to treatment. Additional factors were low education and low income of PWE (Tran et al., 2008). Non-adherence to AED is considered as a secondary treatment gap and is an additional burden to the high treatment gap estimated over 90% in Lao PDR. Identifying factors that enhance antiepileptic drug adherence, or the profile of patients likely to be adherent are hence of great public health interest in Lao PDR. In a cross-sectional study, we assessed the influence of predictive factors on adherence therapy after hospital based (HB) and community based (CB) approaches in Vientiane Municipality (VTE).

## Methods

### Study site

The Lao PDR (6.6 million inhabitants) is a land-locked country surrounded by Thailand, Cambodia, Vietnam, China, and Burma. Lao PDR ranks 132rd of 177 countries according to the human development index (United Nations Development Programme, 2007). A total of 44% of the population live below the international poverty line of US\$ 1.25 per day.

The survey was conducted in Vientiane Municipality which is composed of 9 districts (Fig. 1). Vientiane Municipality accounts for 745,000 inhabitants where the family

income is higher than in remote area of Lao PDR (United Nations, 2011).

### Available medical care for PWE in Vientiane Municipality

Frequent shortage of antiepileptic drugs is observed in Lao PDR (Chivorakoun et al., 2012). Only pharmacies managed by pharmacists or pharmacists assistant are allowed to sell Phenobarbital (Chivorakoun et al., 2012). In 2004, Vientiane Municipality includes 277 pharmacies, with only 69 (24.9%) pharmacies allowed to sell antiepileptic drugs. Phenobarbital was reported to be available in 53% of authorized pharmacies (Odermatt et al., 2007).

In 2011, health facilities providing medical care for patients in Vientiane Municipality consisted of: 4 teaching and reference hospitals; 9 district hospitals; 42 health centers; and 141 private clinics. The medical care for PWE is mostly provided by public health facilities either through Hospital Based intervention or a Community Based intervention (Fig. 1).

Until 2006, the reference Hospital (Mahosot Hospital) was the main medical care provider for PWE in all the 9 districts. This Hospital Based intervention includes daily consultations and follow-up for PWE who arrive spontaneously for follow-up and consultations provided by the psychiatry unit or the emergency department. PWE can buy AED at the hospital pharmacies if any are available (Odermatt et al., 2007). Annually, around 350 PWE are seen at Mahosot Hospital (Barennes et al., 2011).

Since 2007, a community-based intervention has been available in 7 hospital districts provided by BASIC NEEDS, a non-governmental organization (Fig. 1) which ended 2 months prior to our survey. This NGO works on mental health and epilepsy. For 2 years, it has been providing trainings to medical staff (diagnosis, treatment and follow-up) and health community volunteers (education, communication). PWE were screened through a community based approach involving community leaders, health volunteers and medical staff. A monthly follow up has been given to PWE consisting of consultations, free drugs, community education, and group psychotherapy. Community volunteers informed PWE (and other patients having mental retardation) about the availability of trained medical health staff and free AED, thus encouraging PWE to consult at the district hospitals. In 2010, about 150 PWE were cared for by this NGO.

### Survey methods

Between May and June 2010, we conducted a community-based cross-sectional study of PWE in Vientiane Municipality. A random selection of villages from the 9 districts of Vientiane Municipality was conducted based on the list of villages available at the district authorities' level. PWE in selected villages were identified through key informants such as

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