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Determinants of impregnated net ownership and utilization in rural community on the Thai-Myanmar border in Prachuab Khiri Khan, Thailand

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Abstract

Efficacy of Insecticide-treated Nets (ITNs), Long Lasting Insecticidal Nets (LLINs) and Indoor Residual Spraying (IRS) in reducing malaria transmission are strongly presented in various countries. ITNs, LLINs and IRS free-of-charge have been used to control among Thai vulnerable populations since 2008. Studies found that the utilization of impregnated net among vulnerable Thai was low. This study investigated factors associated with impregnated net ownership and utilization among population living in rural community. Random samples of 1,673 respondents living in 678 households on the Thai-Myanmar border in Prachuab Khiri Khan province were interviewed from October 2010 to May 2011. The prevalence of impregnated nets ownership was 41%, and 70% of their own utilized them. In multivariate analysis, Thaipladthin ethnicity (adjusted Odds ratio (aOR) 2.1; 95% CI: 1.2-3.6) and access to IRS (aOR 2.3; 95% CI: 1.6-3.1) were associated with impregnated net ownership. Malaria infection (aOR 4.2; 95% CI: 1.8-9.4), and irregularly use of electric fan (aOR 2.0; 95% CI: 1.3-3.1) were positively associated with net utilization. Whereas, high level of barrier to ITN/LLIN utilization (aOR 0.6; 95% CI: 0.4-0.9) was associated with net utilization. Our findings reflect an existing gap between net ownership and utilization. To scale-up the adoption of impregnated net utilization, enforcing ownership through sustainable strategies that involved social marketing should be addressed.

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1. Introduction

Malaria trend in Thailand has markedly reduced in morbidity and mortality since 1950s because of insecticide control of vector mosquitoes. However, most of transmission with more severity occurs along the Thailand-Myanmar border where the southern region had the second highest morbidity caused by multidrug resistant strains of *Plasmodium falciparum* due to a declining in efficacy of artesunate-containing regimens among migrants and ethnic minority [1]. Studies had shown that factors associated with malaria risk including being and living in poor housing and occupations nearby or within forest areas e.g. agriculturist and laborer [2]. Moreover, lack of knowledge and/or perception regarding to protection against malaria, lacking of malaria prevention resources, difficulty to assess to health care services, and receive malaria control, as well as cultural and health beliefs are important factors that can either encourage or discourage preventive health behaviors [1, 3]. To reduce malaria infection among vulnerable populations, WHO/Global Malaria Programme (WHO/GMP) has subsidized indoor residual spraying (IRS) in combination with impregnated nets i.e. insecticide-treated net (ITN) and long lasting insecticidal net (LLIN). Numbers of evidence documented the efficacy and efficiency of sleeping under impregnated net in reducing malaria morbidity and mortality in children, and adult in various malaria affected countries [4]. Studies found that the utilization of impregnated net among Thai was low [5, 6]. We investigated determinants of impregnated net ownership and its utilization in Thai populations living in rural community on the Thailand-Myanmar border in Prachuab Khiri Khan province.

2. Methodology and Design

The methods and study setting in this study were described elsewhere [6]. Briefly, this study was undertaken in Prachuab Khiri Khan province, the top ten of the highest morbidity. The data was collected from Ban Chairaj sub-district, the southernmost district of the province. Apart from registered population of 6,371 comprising 1,844 households, 10% of the residents are ethnic minority “Thaipladthin”.

A random sample of 678 households was invited to participation from October 2010 to May 2011. The constructed questionnaire was face-to-face interview. The definition of impregnated net ownership in this study defined as household that own impregnated net either ITN or LLIN. Net utilization defined as self-report of individual member in family sleeping under net the night prior to the interview. For each household, the head of the random household was interviewed for his/her socio-demographic, number of children under 5 years and pregnancy, any member with history of malaria infection during January 2010 to May 2011, personal protection behavior, primary vector control uptake and housing characteristics. While the individual questionnaire comprised of socio-demographic variables including sex, age, education level, occupation, marital status, being Thaipladthin ethnicity. In addition, the information focused on net utilization was asked to each family member for the type of nets that he/she had slept at last night as well as the number of persons sharing the net. An open-ended question was also asked to the head of household who own the impregnated net for the reason of no ITNs/LLINs utilization. Global positioning system (GPS) waypoint were used to identify household's location using eTrex™ GPS device. Procedures were followed according to eTrex™ user's manual. This study was approved for ethical consideration from the Institutional Review Board at the Faculty of Public Health, Mahidol University (approval number MUPH2010-180).

Descriptive statistics was used to describe characteristics of surveyed participants. Households were categorized into two groups according to ownership status. Chi-square test or Fisher's exact test were used to identify household characteristics that potentially associated with own at least one impregnated. Odds ratio and 95% confidence interval were calculated. Potential exposures from bivariate analysis (p value < 0.10) were included in the multiple logistic regression. To identify factor associated with net utilization, all individuals living in the household that own at least one impregnated net were included in the analysis as the above procedure. All variables with p value < 0.05 indicated statistical significance. All analyses were performed using SPSS 18.0 (SPSS Inc, Chicago IL).

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