SUMMARY

Malaria is a public health problem in the world and also in Indonesia. *Plasmodium falciparum* infection causes severe malaria and deaths worldwide. In Penajam Paser Utara (PPU) district, East Kalimantan province, Indonesia, malaria is still remained a public health problem. Anti malarial drugs and insecticide resistance have been discovered in East Kalimantan province. The number of malaria cases occur in PPU district were reported from 11 health centers and 3 health centers showed incidence > 1/1000 in 2014. Based on the survey results of Penajam Paser Utara District Health Office of Disease Control Malaria in 2014, the source of malaria in the district of PPU is from a company, which engaged in the field of reforestation. Risk factors of knowledge, attitude, and practice to malaria contribute to malaria control.

The aim of study was to analyze the risk factors including knowledge, attitude, and practice to malarial prevention and environment to *Plasmodium falciparum* infection at malarial endemic areas in Penajam Paser Utara district, East Kalimantan province. A cross-sectional study was conducted at malarial endemic areas in Penajam Paser Utara district from April to June 2015. Sixty-one symptomatic malarial patients were recruited by informed consent and willing to participate to be interviewed. Their peripheral blood was aseptically collected by finger prick for malarial diagnosis by microscopy and *Plasmodium falciparum* was identified. In total 38 patients were diagnosed to suffer from malaria *falciparum* or non *falciparum* by confirmed diagnosis of microscopy at Laboratory of Malaria, Institute of Tropical Diseases, Universitas Airlangga, Surabaya. The interview data containing characteristics, environment, knowledge, attitude, and practice to malarial prevention from 38 malarial patients was analyzed by SPSS.

Most malarial patients were over 10 year old (97.4%, 37/38) and man (86.8%, 33/38). Most of them were living at forest areas (52.6%, 20/38), and dominantly infected with *P. falciparum* (55.3%, 21/38). There was not significantly difference between malaria *falciparum* and non malaria *falciparum* on the distance of their house and corral, the occupation, knowledge, attitude, and practice to malaria prevention ($P \geq 0.05$, *Chi-square* test and *Fisher's exact* test). However, among malaria *falciparum* patients, most of them were farming (90.5%, 19/21), and had a low knowledge, inappropriate attitude and practice to malarial prevention (90.5% (19/21), 57.1% (12/21) and 95.2% (20/21) respectively). These indicated that they suffered from *falciparum* infection due to they did not know or neglect how to prevent malaria and did not do malarial prevention during working at farm, particularly avoiding mosquitoes biting. Furthermore, the risk factors of *falciparum* infection were their occupation as farming and inappropriate practice to malarial prevention (PR = 1,12 and PR = 1,72 respectively). It might due to they did not do malarial prevention activities for avoiding mosquitoes biting during working at farm areas at night, such as use repellent, long sleeved clothes, or bed net.

It suggested that the risk factor of malaria *falciparum* at malaria endemic areas in Penajam Paser Utara of district were farming occupation and

inappropriate practice to malaria prevention. Thus, it is necessary to conduct health education of malaria and its prevention regularly by health staff and insecticide bed-nets distribution to people who are living and working at forest areas. The limitation of study was a few of malaria cases occurred in Penajam Paser Utara district during sample collection. It might due to active malaria case finding and treatment is conducted by health organ in this district.