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# Malaria related care-seeking-behaviour and expenditures in urban settings: A household survey in Ouagadougou, Burkina Faso

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ABSTRACT

In Sub-Sahara Africa, malaria inflicts a high healthcare expenditure to individuals. However, little is known about healthcare expenditure to individual affected by malaria and determinants of healthcare seeking behaviour in urban settings where private sector is thriving. This study investigated the level and correlates of expenditure among individuals with self-reported malaria episode in Ouagadougou, Burkina Faso. A cross-sectional household survey conducted in August-November 2011 in Ouagadougou covered 8,243 individuals (1,600 households). Using Generalized Estimating Equations, the analysis included 1082 individuals from 715 households, who reported an episode of malaria. Of individuals surveyed, 38.3% sought care from public, 27.4% from private providers, and, 34.2% self-medicated. The median cost for malaria treatment was USD10.1 (4,850.0XOF) with significant different between public, private and self-medication ($p < 0.001$). In public primary care health facilities, the median cost was USD8.4 (4,050.0XOF) for uncomplicated malaria and USD15.2 (7,333.5XOF) for severe malaria. In private-for-profit facilities run by a medical doctor, the median cost was USD30.3 (14,600.0XOF) for uncomplicated malaria and USD 43.0 (20,725.0XOF) for severe malaria. Regardless of the source of care, patients with insurance incurred significantly higher expenditure compared to those without insurance ($p < 0.001$) and medicine accounted for the largest share of the expenditure. The type of provider, having insurance, and the severity of the malaria predict the amount of money spent. The high financial cost of malaria treatment regardless of the providers poses threat to the goal of universal access to malaria interventions, the unique way to achieve elimination goals.



## 1. Introduction

The burden of malaria remains unacceptably high worldwide, particularly in Africa. Although the disease is preventable and treatable, Africa accounts for 90% of the global prevalence of the disease (WHO, 2012, 2013), as well as 91% (~709,000) of deaths (Vitor-Silva et al., 2009; WHO, 2010). At the macro-level, in addition to its social costs (Sicuri et al., 2013), the annual economic growth rate was 1.3% lower in malaria endemic countries than in those where it is not endemic (Gallup and Sachs, 2001). Further, Gallup and Sachs (2001) found that the Gross Domestic Product (GDP) growth rate was reduced by 0.4% vs. 2.3% in endemic compared to non-endemic countries. At the micro-level, individuals and households are affected by direct costs for prevention, diagnosis, and treatment. In Papua New Guinea, the total cost to treat episodes of malaria among outpatients was USD 9.20 vs. USD 25.20 for inpatients (Sicuri et al., 2012). In addition to direct costs, there are costs associated with loss of income and days in school (Brooker et al., 2000; Chuma et al., 2010). Several studies have examined healthcare-seeking behaviour (HSB) for malaria and found that patients often resorted to self-medication to minimize costs (Dzator and Asafu-Adjaye, 2004; Nyamongo, 1999, 2002), which also include travel and services (Asenso-Okyere et al., 1998). Other patterns that affect HSB include geographical access, disease severity, sex, and parents' education level (Miguel et al., 1998; Müller et al., 2003).

Malaria's prevalence has declined across Africa in recent years (Bhattarai et al., 2007; Ceesay et al., 2008; Kleinschmidt et al., 2009;

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Noor et al., 2014; Otten et al., 2009; Sievers et al., 2008; WHO, 2014, 2015b). However, in Burkina Faso, it remains the most common reason for doctors' visits, and is the leading cause of death in those less than 5 years old (Burkina Faso, 2010a, 2012, 2013). Significant efforts have been made in the past decade to increase malaria control interventions, including vector control through an extensive provision of insecticide-treated nets, the implementation of Artemisinin combination therapies (ACTs), and intermittent preventive treatment (Burkina Faso, 2010d). Currently, the World Health Organization (WHO) has approved the first-line treatment for uncomplicated malaria that includes five ACTs (WHO, 2015a).

Despite the efforts to provide affordable health services in Burkina Faso, malaria imposes a high economic burden on households. However, there is limited recent evidence on HSB and the financial burden borne by malaria patients in urban areas. Existing evidence comes mostly from rural settings (Dzator and Asafu-Adjaye, 2004; Mugisha et al., 2002; Müller et al., 2003) where healthcare is provided predominantly in public health facilities, and differences in malaria treatment costs between rural and urban settings have been documented (Okeke and Okeibunor, 2010; Orem et al., 2013). In the latter, the private health facilities thrive and increasingly are the first choice for those seeking healthcare (Howard and Roy, 2004; NFHS-India, 2009).

Approximately 12% of Burkina Faso's population (2,000,000 inhabitants) resides in Ouagadougou (Burkina Faso, 2014a). The city has the highest density of health facilities in the country, including significant numbers of private providers — more than half of the country's private health facilities (Burkina Faso, 2015). Public and private providers charge user fees. To the best of our knowledge, no recent population-based study has investigated HSB and expenditures related to the treatment of malaria episodes among populations in urban settings in sub-Saharan Africa (SSA). This study, which was part of a PhD project, investigated HSB for malaria and the associated expenditures in the current healthcare landscape in the malaria endemic city of Ouagadougou.

## 2. Methods

### 2.1. Study settings and population

The health system in which the study was conducted includes the public sector, with two University hospitals, one national hospital, four district hospitals, and approximately 90 first-line facilities. Approximately 56.3% (~229) of the country's private health facilities operate in Ouagadougou (Burkina Faso, 2015). Private providers include private for-profit (PFP) and private not-for-profit (PNFP)—generally nongovernmental and faith-based. In addition, the army, the municipality, and some companies offer healthcare services. Of the country's medical doctors, nurses and midwives, 39.4%, 33.7%, and 20.8% respectively, worked in Ouagadougou (Burkina Faso, 2010c). In 2013, there was 0.90 medical contacts per person for the city of Ouagadougou (versus 0.78 for the country), with malaria the top reason for visiting a healthcare facility (Burkina Faso, 2014b).

A cross-sectional study of 715 households (1082 individuals) with self-reported episodes of malaria was conducted from August to November 2011 in Ouagadougou. This sample was derived from a project that covered 1600 households in Ouagadougou. The sample size was determined based on similar studies (Amaghionyeodiwe, 2007; Habtoma and Ruys, 2007; Janjua et al., 2006). We used a two-stage cluster random sampling with probability proportional to size to select participants in all the 30 Administrative Sectors (ASs) of the city. Further details are provided elsewhere (Beogo et al., 2014).

### 2.2. Ascertainment of cases, inclusion and exclusion criteria

We included cases of malaria diagnosed in a health centre, as well as presumed cases of self-treated malaria. The study applied Pokhrel and Sauerborn's decision making framework (2004). In the first step, participants who reported an episode of malaria in the past 30 days were included. We then recorded the symptoms experienced and action taken. For self-treated cases, in addition to the recommended medicine (ACT) taken, we used symptom-based criteria, with fever as the common denominator. The following symptoms were listed: (1) fever; (2) convulsions; (3) headache; (4) vomiting; (5) joint pain; (6) abdominal pain; (7) fatigue/asthenia/prostration; (8) anemia; (9) diarrhoea; (10) respiratory difficulties; (11) crying; and (12) others. With patients who self-medicated, fever was considered the invariable symptom associated with at least two additional malaria-related symptoms. To illustrate, we considered a malaria case as one in which any antimalarial (ACT) was used for fever associated with arthralgia and headache or fever plus convulsions. Cases of fever alone, or with headache, digestive, or respiratory symptoms, were excluded (Ye et al., 2007). Similar to Bertoldi et al. (2008), we requested the medicine package and/or the prescription provided. Thus, prescriptions from healthcare professionals (n = 42) unrelated to cases of malaria were excluded. Among self-medicated patients, association with the drug used and the symptom screening led to 407 cases (n = 20 discarded), of whom 12.6% were excluded because, in assuming to treat malaria, they: (1) used an unrelated drug (paracetamol, ibuprofen, aspirin); (2) a non-recommended antimalarials (chloroquine, herbs), or 3) did not use an antimalarial at all. In total, the screening produced 1082 cases: 709 (diagnosed in a health centre) and 373 (self-medicated); 98 cases dropped out (Fig. 1).

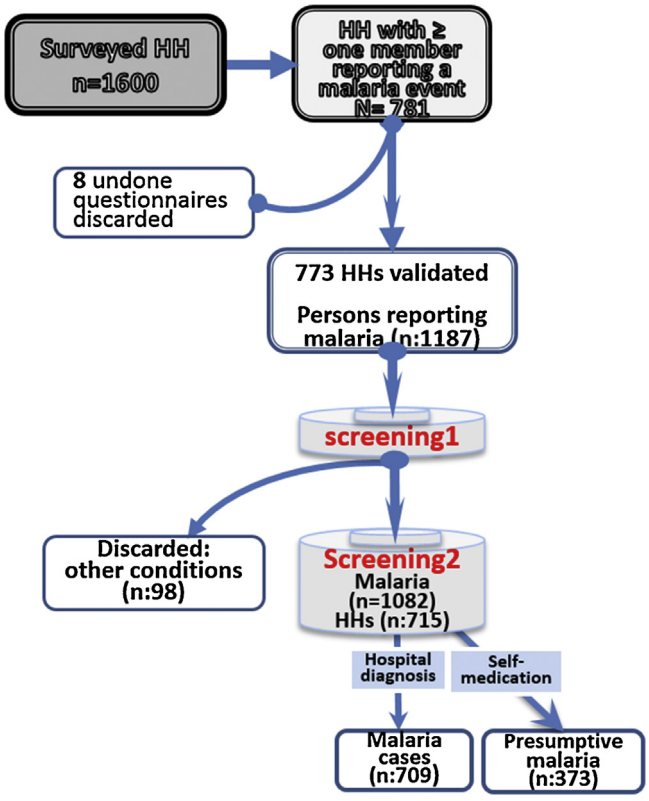


**Fig. 1.** Analytic sample screening flow. **HH**: household