

## Assessing Factors Influencing Health Seeking Behavior for Malaria Treatment in Children under Five Years in Rwimi Town Council Kabarole District

Gerald M\*

Makerere University College of Health Sciences, School of Public Health, Uganda

\*Corresponding author: Muhumuza Gerald, Makerere University College of Health Sciences, School of Public Health, Uganda, E-mail: gkmuhumuza@gmail.com

Rec date: Nov 06, 2015; Acc date: Dec 29, 2015; Pub date: Dec 30, 2015

Copyright: © 2015 Gerald M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

**Introduction:** Malaria remains a major cause of mortality and morbidity in Kabarole district accounting for both out and in Patient admissions. One of the key malaria control strategies is timely and effective treatment of cases. The treatment seeking behavior for malaria is critical for the success of this control strategy.

**Methodology:** A cross-sectional household survey was conducted among caregivers of children under five years of age. A total of 368 household heads were sampled from 6 villages. Data was collected using questionnaires and the data collected was coded, entered and then analyzed to generate results.

**Results:** The majority (67.1%) of the children had suffered from fever in the past three months to the study and about 44.2% of the caretakers sought treatment from formal health facilities within 24 hours of onset of signs and symptoms of fever. Health seeking from a formal health facility was associated with level of income (possession of a grass thatched house) of the caregivers [AOR 0.7 CI (0.09-0.9)], the age ( $\leq 30$  years) of the caregiver [AOR 6.2, CI (1.11-8.81)] and the level of education (secondary) of the caregiver [AOR 5.6, CI (0.09-0.9)]. Long waiting hours and availability of drugs at health centres influenced treatment seeking behaviour.

**Conclusion:** A low proportion of caretakers sought treatment for their children below five years within 24 hours from formal health facilities and this has reduced the. The waiting time at health facilities and the availability of drugs should be enhanced to increase on the health seeking behaviors.

**Keywords:** Assessing; Malaria; Opinion; Data Management; Packaging materials

### Introduction

In the last two decades, malaria has remained a major cause of mortality and morbidity in Africa. At a global scale, WHO (2013) estimates that 207 million cases of malaria occurred in 2012 alone hence leading to 627, 000 deaths. In the same year, 80% of the cases and 90% of the deaths occurred in Africa and most deaths (77%) were in children under 5 years of age. This led to a loss of US \$ 12bn of GDP in Africa [1].

In Uganda, malaria is the leading cause of morbidity and mortality, accounting for approximately 40% of outpatient visits at health facilities, 18% of all hospital admissions, and 12% of all inpatient deaths. Uganda records an estimated 100,000 malaria related deaths per year with children and pregnant women being the majority. This is due to the country's tropical climate and seven months of rainfall allowing perennial malaria transmission across 95% of the country [2]. The WHO [3] recommends a multi-pronged strategy to control and eliminate malaria, which includes vector control interventions, preventive therapies, diagnostic testing, treatment with quality-assured artemisinin-based combination therapies (ACTs), and strong malaria surveillance systems.

In Uganda, on onset of signs and symptoms, caretakers of children seek treatment [4] from both the formal and informal health sectors. The formal health facilities from where caregivers seek treatment mainly include health centers one, two and three that are available from where care takers seek health services for their sick children. Care takers may also seek treatment from drug shops and pharmacies where they buy anti-malarials for treating their children whereas others go to private clinics that are near their vicinity to seek treatment. Others resort for informal treatment like using traditional herbal medicine while others visit Community health workers [5]. Those who have home stocked drugs may use the available drugs at home to treat their children in case they are sick. The challenge is that they may not take the recommended drugs and if they do, they may not take them for the recommended duration.

Distance to health facility, cost of anti-malarials and the decision made by the caretakers at home all determine the health care seeking behavior by caretakers for their children [6]. In communities where mothers or caregivers are responsible for the household chores and general well-being, they may prefer home treatment as they may not get time for health seeking at health centers. Such caretakers stock enough anti-malarials at home for self-medication of their children. Household headship, education level and income are also associated with health care seeking [7].

Caregivers who have adequate knowledge about health seeking go for early and adequate treatment since such parents perceive malaria as

a threat to their children. It therefore appears that in order to improve health seeking behaviors, household knowledge, attitudes and practices towards malaria treatment at home are essential [6].

Most caregivers may seek treatment from only one provider [8] and this creates a burden since in absence of the service provider, the caregivers do not seek for treatment from other services. This has created a gap in health care seeking causing most children failing to receive recommended treatment in recommended durations [4].

This study aimed at determining the health seeking behaviors for malaria management in children under five years in Rwimi town council Kabarole district so as to generate information that will be used to strengthen local authorities to put strategies for increasing health seeking behaviors for malaria treatment.

## General Objective

The general objective of this study was to assess the factors determining the health seeking behaviors for malaria management in children under five years in Rwimi town council Kabarole district.

## Objectives

To describe health seeking practices in households for treatment of malaria in children under five years in Rwimi town council.

To determine individual factors that influence health seeking behavior for treatment of malaria in children under five years Rwimi town council.

## Methodology

### Study site

The study was conducted in Rwimi town council, Kabarole district in mid-western Uganda. The town council is approximately 386 km from Kampala the capital city of Uganda and borders Kasese district to the north. Rwimi Town Council is an urban area comprised of 4 wards and 9 villages with an approximate population of 22, 000 people.

### Study population

The study population consisted of children below 5 years of age and the respondents were their caregivers or parents. A caregiver was defined as any person above 18 years of age who at the time of the study was directly responsible for the care of an under five.

### Study design

The study employed a mixed method approach for data collection. A cross sectional household survey was conducted among caretakers of children, while focus group discussions were conducted among caregivers and parents of children. Key Informant Interviews were conducted among health personnel, opinion leaders and community health workers.

### Sample size consideration

A total of 368 households were selected to participate in the study. The sample size was estimated using the Kish and Lisle formula for a single proportion (1995). Using a standard normal value of 1.96, and an estimated health seeking of care takers of 0.6 [5], an error of 5%.

## Sampling Strategy

Out of 4 wards in Rwimi town council, 3 were sampled by simple random sampling using the ballot method and a total of 6 villages were selected per ward using similar methods. A list of households was obtained from the local council 1 of each village, and updated with the help of a Community Health Worker. This was done to determine the number of households with children under five years in each village. The register was used as a sampling frame and from this; the required number of households for the study were sampled by systematic random sampling. Within the selected households, in case a household had more than one child under 5 years, one child was selected by simple random sampling using the ballot method.

Key informants were selected purposively and included health workers and opinion leaders who were knowledgeable about the subject matter. A total of 6 focus group discussions were conducted with male and female parents or care takers. Each focus group discussion consisted of 8 members.

## Data Collection

A semi-structured questionnaire was used to collect quantitative data from caregivers. Guiding questions were used to collect information during Focus Group Discussion and Key Informant interviews.

## Quality Control

Four research Assistants were trained on the protocol and on data collection techniques.

The data collection tools were pre-tested in households that were not part of the selected sample.

A lot of care was put in designing the questionnaires to minimize recall bias because of the details expected from the respondents.

## Data Management

The data was checked and cleaned by the principal investigator at the end of every day. The cleaned data was entered using Epi info software, a check program was used to ensure consistent entry of data and to minimize errors.

## Analysis Plan

Quantitative data was entered using Epi info version 3.5.1 and analyzed using STATA version 10.0 software. Uni variable data was presented using frequency tables, bi variable data was presented using **percentage** tables, proportions, and graphs. Measures of central tendency were also generated for multivariate data.

## Ethical Considerations

The study was approved by the Higher Degrees Research and Ethics Committee (HDREC)-IRB (Institutional Review Board) of Makerere University School of Public Health. Permission to conduct the study was sought from District Health Officer, District Health Inspector and Local Council leaders in their respective areas.

Written informed consent was sought from participating household heads and CHWs by using consent forms translated to their appropriate local language, with a thumb print option provided for

illiterate participants so as to have an informed proposed consent. Confidentiality was maintained at all levels and times by using anonymous questionnaires that were coded.

## Results

The study was carried out between 2nd to 12th January, 2015 in Rwimi Town council, Kabarole district to assess the health seeking behaviors for malaria treatment amongst children below five years.

### Baseline characteristics of the study participants

Of 405 households approached for interview, 368 (90.6%) agreed to participate in the study. The age of the caregivers ranged from 18 to 44 years, with a mean of 26 years, and a standard deviation of 0.76. The age of the studied children ranged from 1-59 months, with a mean of 29 months and standard deviation of 0.56. On average 50.5% (186/368) of the children were in the age group 17-34 months and most of them were males.

The majority 75.6% (278/368) of the caregivers were females and 15.2% (56/368) of the caregivers had no formal of education. However, 43.8% (161/368) had attained primary education, 25.0% (92/368) secondary education and only 16% (59/368) had attained tertiary education. Most of the caretakers 46.5% (171/368) were catholic, followed by Anglican 32.3% (119/368), Muslim 11.7%(43/368) and SDA 9.5% (35/368).

In terms of social-economic characteristics, most 45.7% (168/368) of the caregivers had mud and pole built houses, and only 11.4% (42/368) of the caregivers had houses built from burnt bricks with plaster. Also, in terms of occupation, the majority 56.7% (208/368) of the caretakers were farmers and only 4% (15/368) were professionals in various fields.

### Health seeking practices amongst caretakers in Rwimi Town council

The majority 67.1% (247/368) of the children had suffered from fever in the three proceeding months to the study and of those, 33.6% (83/247) sought treatment for their children below five years from government health unit, 30.4% (75/247) from non-government health units, 17.4% (43/247) from home, 10% (25/247) from community health workers whereas 8.5% (21/247) had not sought for treatment for their children by the time of the study.

Most 33.6% (83/247) of the caregivers use government health units as their first choice of treatment for children below five years and

61.1% (51/83) of those caregivers mentioned that they sought services from government health units particularly because it was near to their households.

The study revealed that 30.4% (75/247) of the caregivers identified non-government health units as their secondary choice of treatment for children below five years. The caregivers said that nearness to non-government health units, 73.3% (55/75) and quality of health services 26.7% (20/75) in terms of timely services makes caregivers seek treatment for their children below five years from non-government health units.

The study found out that 17.4% (43/247) of the caregivers use treatment at home as their third line of treatment for their children below five years. The caregivers use home treatment because there are no timely services at health centres 44.5% (19/43) and have home stocked anti-malarials 55.5% (24/43). In all the households studied, 23.4% (86/368) of the caregivers had anti-malarials stocked at home. Table 1 summarizes the findings about choices of treatment.

### Time interval for seeking treatment from onset of symptoms and signs of fever

About 44.2% (100/226) of the caretakers sought treatment for children below five years within 24 hours of onset of signs and symptoms and 11.1% (25/226) within 3-4 days of onset of the first sign of symptoms of fever. The first action taken by care takers was variable; 16.7% (39/233) gave a lot of fluids, 56.2% (131/233) provided sponging, 4.3% (10/233) gave herbal medicine, 4.3% (10/233) gave drugs available at home and 18.5% 43/233) did not take any measure. Nearly 95% (235/247) of all caregivers who sought for treatment for their children indicated that the children completed the full dose of anti-malarial drugs.

### Formal versus informal care seeking

The majority 69.8% (157/225) of caregivers had sought for treatment for their children from formal health services. Formal health services included government health units and non-government health units whereas informal health services included community health workers, treatment for children below five years at home and traditional healers. Non-government health units included private clinics, drug shops, and dispensaries whereas government health units included health centers I and II since these are the only ones present in the town council

Variable	Frequency, (n=247)	Percentage (%)
Choice of treatment		
Where caregivers seek treatment from		
GHU	83	33.6
NGHU	75	30.4
Home	43	17.4
CHW	25	10.0
Did not seek any services	21	8.5

Reasons for seeking treatment from GHU	n=83	
Nearness to households	51	61.1
Trust in health workers	11	13.7
Timely services	21	25.2
Reasons for seeking treatment from NGHU	n=75	
Nearness to households	55	73.3
Timely services	20	26.7
Reasons for seeking treatment from home	n=43	
Stocked anti-malarials	19	44.5
No timely services	24	55.5

**Table 1:** Choices of treatment of children below five years by caregivers.

Individual factors influencing the health seeking behavior for treatment of malaria amongst children below five years following a bi variable analysis

In a bi variable analysis, caregivers below 30 years were more likely to seek treatment for children below five years from formal health services than caregivers above 30 years [COR 7.1, CI [1.42-7.57]]. The sex of the caretaker was not associated with seeking treatment from either formal or informal health sector [OR 0.6 CI [0.52-1.38]] despite the fact that more female caretakers 72.6% (85/117) had sought for health services from formal health sector than males.

The level of education of the caregiver was associated with seeking treatment from formal services. Caregivers who had attained

secondary education were more likely to seek for care formal health care compared to those who had other level of education [COR 6.9 CI [1.39-9.37]]. Socio-economic status is associated with seeking for health services from formal health sector. Most caretakers 67.1% (102/152) who had houses with burnt bricks and plaster had sought for health services from formal health sector than those who had grass thatched and mud houses.

However, religion [COR 0.9 CI [0.21-4.37]], being married [COR 1.2 CI [0.23-1.23]] and the occupation of caretakers (being a farmer) [COR 0.6 CI [0.17-2.12]] had no influence on choice of treatment.

Variable	Outcome		Bi Variable analysis		Multi Variable analysis	
	Informal n (%)	Formal n (%)	Crude OR[95%CI]	P-Value	Adjusted OR [95%CI]	P-Value
Age						
<30	30(35.7)	138(48.7)	7.1[1.42-7.57]	0	6.2[1.11-6.58]	0.001*
>30	20(23.8)	107(37.8)	1			
Level of formal education of caretakers						
Informal	16(19.0)	39(12.0)	1			
Formal	25(29.8)	40(14.1)	6.9[1.39-9.37]	0.008	5.6[1.12-8.81]	0.016*
Socio-demographic characteristics						
Grass thatched with Mud and poles	24(28.6)	22(7.8)	0.4[0.05-0.53]	0.02	0.7[0.09-0.9]	0.001*
Burnt bricks with plaster	11(13.1)	31(11.0)	1			
C.I: Confidence Interval, P: Probability Value, *statistically significant						

**Table 2:** Multivariable analysis: Crude and adjusted effects of the predictors of health seeking behaviors.

Individual factors influencing the health seeking behavior for treatment of malaria amongst children below five years following a multi variable analysis

The multi variable analysis was conducted on all variables that had  $p \leq 0.2$  under bi variable and those factors that could have a plausible influence. Following the adjusted analysis, the age of the caregiver (below 30 years) [adOR: 6.2; 95%CI [1.11-6.58], and the level of education of the caregiver (secondary education) [adOR: 5.6; 95%CI [1.12-8.81] were significantly associated with seeking treatment by caregivers for their children below five years of age. In a similar way, the social-economic characteristics (possession of a grass thatched house) [adOR: 0.7; 95%CI [0.09-0.9] were also associated with the seeking for care from formal health facilities. The details are shown in Table 2.

## Discussion

This study assessed the health seeking behaviors for malaria treatment amongst children below five years. A total of 367 caregivers aged between 18-44 years participated in the study in Rwimi town council, Kabarole district-mid western Uganda. The study found out that 64.0% of the caregivers were seeking treatment for their children below five years from formal service providers. Individual and health system factors influence health seeking behaviors.

### Health seeking practices amongst caretakers in Rwimi town council

The majority (64.0%) of the caregivers sought treatment from formal health services for treatment of children below five years. This was probably because the caregivers had trust in the formal health services and coupled with the abolishment of user fees, could have influenced the choice of treatment. The findings are similar to other parts of Uganda whereby caregivers use formal health services as their first point of care for their children below five years [9-11]. These proportion who sought care from formal health facilities are similar to those found in other studies carried out in DRC (51%), Madagascar (53%) and Nigeria (46%) whereby caregivers use formal health services as their first point of care for their children below five years [11].

The findings contrast those found in Liberia where by only 23% of the caregivers sought for treatment from formal health. This was due to the presence of facility fees which decreased satisfaction with formal health system [12]. When caregivers do not seek for treatment from formal health services, they may resort to poor treatment practices like taking analgesics instead of recommended anti-malarials [13].

Having a residence near to a formal health service provider influenced seeking for treatment for children below 5 years of age by caregivers. This may be because caregivers can access the health services for their children more easily. The distance to a formal health facility determines accessibility, availability, affordability, acceptability and accommodation of health seeking practices [14] and hence determines morbidity and mortality among children under 5 years of age.

In a study carried out in Nigeria, distance was not a determinant factor for seeking treatment for children below five years by caregivers. The dominant reason for the first choice of treatment was the availability of trained personnel. This was because the health centre was near enough and the caregivers perceived that the services they were getting there outweighed any considerations of distance for those

who used it as their initial source of treatment [15]. The proportion of caregivers seeking treatment from formal health services is similar to other studies in eastern and south western Uganda [9,10].

### Time interval for seeking treatment for a child below five years

About 44.2% of the caregivers sought for treatment for their children below five years within 24 hours of onset of signs and symptoms. This may be because majority (59.4%) of the caregivers stay within 2 kilometers to formal health service providers. Seeking treatment within 24 hours of onset of signs and symptoms reduces illness progression to severe stages and therefore decrease mortality [16].

However, this value was lower than other studies carried out in Uganda. About 50% of the caregivers sought for treatment for their children under five years within 24 hours of onset of signs and symptoms [10]. This could be due to differences in the level of knowledge in the different study settings of Uganda. The proportion of caregivers who sought for treatment for their children within 24 hours was higher than that found in Senegal [17]. Such caregivers may cause illness progression to severe stages and therefore increase chances mortality [16].

### Individual determinants of health seeking practices of caregivers for children below five years

The main predictor of health seeking behaviors in this study was age of the caregiver. In the study, caregivers below 30 years were significantly more likely to seek treatment from formal health care. This may be because caregivers who are below 30 years have less work load at home and so have adequate time and energy to walk long distances to seek treatment for their children. The major family roles and responsibilities at home increases as the age of the caregiver increases. This finding contrasts that in Ethiopia whereby caregivers preferred home treatment as they may not get time for health-seeking at formal health services [6]. In some places older women were more likely to seek appropriate health care compared to younger women [18,19].

The level of education of a caregiver influenced treatment seeking behavior. In the study, 74.3% of the caregivers who had attained formal education (secondary) sought for treatment from formal health services. This may be because education increases awareness and knowledge [13] and so fosters early recognition of signs and symptoms of malaria [20]. Such caregivers have good perceptions about causation, severity and accessibility of formal health services and so take interventions to seek for treatment in time. This result was in-line with other studies in Kenya and Cote D'Ivoire where caregivers with at least post-primary education were more likely to initiate treatment in the formal sector for their children below five years [7,12]. However, these results are inconsistent with two other studies in Ethiopia that found that caregivers' level of education was not associated with initial place of treatment [16,21]. In other studies carried out in Uganda, 68% of the caregivers had sought treatment from formal health care but this was not associated with any form of education.

Another predictor of health seeking behaviors by caregivers for children below five years was social economic status. In the study, 75.7% of the caregivers who had burnt bricks and plastered houses had sought for health services from formal health care. This may be because such caregivers had enough resources to seek treatment from

formal health services since low social economic status causes delays in seeking services and the trend starts with the least poor to the most poor. This concurs with several other studies in Uganda which indicated that health care seeking among the poor is worse than that of the least poor [22]. However, some other studies in Uganda contradict this finding [23].

This result was in line with a study carried out in Senegal in which socioeconomic status was a predictor of seeking for care in the formal public health sector [15]. In another study in Tanzania, a mortality of 4.2% and 3.7% was associated with being poorest and least poorest respectively [13]. A study in Bukina Faso showed that for a journey of 6 hours to a health facility, each additional hour of walking time resulted in a doubled risk for children under five years.

### Study Limitations

It was possible that some caregivers gave false information regarding health care seeking since they would look irresponsible for not seeking treatment for their children under five years. However, this was mitigated by not using self-directing questionnaires and by probing such questions so that the respondent does not have any bias.

There was a possibility of recall bias since the three months preceding to the study was a very long time for the caregivers to remember everything about their children under five years. However, this was minimised by comparing the caregivers response with a treatment card for verification purposes. In case a caregiver used home treatment, we would ask for the left over drugs or packaging materials.

The strengths of this study included using random sampling method that enabled generalization of results since the study population was highly representative. Causality could not be established though most variables showed correlation.

### Generalization of the results

This study is highly generalizable in Uganda since most findings were compared to other studies within the country. In general, the level of education, the level of income and the age of the caregivers influenced the health seeking behaviors and this was highly compared to both in Uganda and outside Uganda.

### Acknowledgement

This dissertation would not have been completed without the enormous effort, guidance and contribution of my supervisor Dr. Adoke Yeka, Makerere University School of Public Health. I also thank Mr. Namuhani Noel who helped me in all aspects requiring statistics.

### Conclusions

**The following conclusions can be deduced from this study:** A low proportion of caretakers sought treatment for their children below five years within 24 hours from formal health facilities and this has reduced the effectiveness of the malaria control strategy. The waiting time at health facilities and the availability of drugs should be enhanced to increase on the health seeking behaviors for caretakers.

### References

1. Kehinde O Fatungase KO, Amoran OE, Alausa KO (2012) The effect of health education intervention on the home management of malaria

among the caregivers of children aged under 5 years in Ogun State, Nigeria. *Eur J Med Res* 17: 11.

2. Peña-Rosas JP, De-Regil LM, Dowswell T, Viteri FE (2012) Daily oral iron supplementation during pregnancy. *Cochrane Database Syst Rev* 12: CD004736.

3. WHO: World Malaria Statistics 2013.

4. Theresa D, Asha G, Sowmya R, Peter S, John B (2013) Healthcare seeking for diarrhoea, malaria and pneumonia among children in four poor rural districts in Sierra Leone in the context of free health care: results of a cross-sectional survey.

5. Mukanga D, Tibenderana JK, Peterson S, Pariyo GW, Kiguli J, et al. (2012) Access, acceptability and utilization of community health workers using diagnostics for case management of fever in Ugandan children: a cross-sectional study. *Malar J* 11: 121.

6. Yewhalaw D, Kassahun W, Woldemichael K, Tushune K, Sudaker M, et al. (2010) The influence of the Gilgel-Gibe hydroelectric dam in Ethiopia on caregivers' knowledge, perceptions and health-seeking behaviour towards childhood malaria. *Malar J* 9: 47.

7. Donnelly J (2011) How did Sierra Leone provide free health care? *Lancet* 377: 1393-1396.

8. Wakagari B (2008) Assessment of quality of care in Tikur Anbesa specialized teaching hospital neonatal intensive care unit Addis Ababa, Ethiopia.

9. Katrina AB (2014) Treatment seeking behaviors among caretakers of children with suspected malaria in eastern Uganda.

10. Tumwesigire S, Watson S (2002) Health seeking behavior by families of children suspected to have malaria in Kabale: Uganda. *Afr Health Sci* 2: 94-98.

11. Megan L, Hellen G, Illah E, Stephen P, Julius N (2011) Monitoring fever treatment behaviour and equitable access to effective medicines in the context of initiatives to improve ACT access: baseline results and implications for programming in six African countries.

12. Kruk ME, Rockers PC, Varpilah ST, Macauley R (2011) Which doctor?: Determinants of utilization of formal and informal health care in postconflict Liberia. *Med Care* 49: 585-591.

13. Adeneye A, Jegede A, Mafe M, Nwokocha E (2013) Community perceptions and home management of malaria in selected rural communities of Ogun state, Nigeria.

14. Kadobera D, Sartorius B, Masanja H, Mathew A, Waiswa P (2012) The effect of distance to formal health facility on childhood mortality in rural Tanzania, 2005-2007. *Glob Health Action* 5: 1-9.

15. Agu AP, Nwojiji JO (2013) Childhood malaria: mothers' perception and treatment seeking behaviour in a community in Ebonyi State, South East Nigeria.

16. Getahun A, Deribe K, Deribew A (2010) Determinants of delay in malaria treatment-seeking behaviour for under-five children in south-west Ethiopia: a case control study. *Malar J* 9: 320.

17. Smith LA, Bruce J, Gueye L, Helou A, Diallo R, et al. (2010) From fever to anti-malarial: the treatment-seeking process in rural Senegal. *Malar J* 9: 333.

18. Mukiira K (2013) The determinants of health-seeking behavior in a Nairobi slum, Kenya

19. Whitney K, Robin A, Renee M (2011) Health Care Access and Utilization Among Young Adults Aged 19-25: Early Release of Estimates From the National Health Interview Survey.

20. Burton DC, Flannery B, Onyango B, Larson C, Alaii J, et al. (2011) Healthcare-seeking behaviour for common infectious disease-related illnesses in rural Kenya: a community-based house-to-house survey. *J Health Popul Nutr* 29: 61-70.

21. Getahun A, Deribe K, Deribew A (2010) Determinants of delay in malaria treatment-seeking behaviour for under-five children in south-west Ethiopia: a case control study. *Malar J* 9: 320.

22. Rutebemberwa E, Kallander K, Tomson G, Peterson S, Pariyo G (2009) Determinants of delay in care-seeking for febrile children in eastern Uganda. *Trop Med Int Health* 14: 472-479.

23. Nabyonga Orem J, Mugisha F, Okui AP, Musango L, Kirigia JM (2013) Health care seeking patterns and determinants of out-of-pocket expenditure for malaria for the children under-five in Uganda. *Malar J* 12: 175.