ORIGINAL ARTICLE

Barriers to Prompt Malaria Treatment among Under Five Children in Mpika District

D. Silweya[*1], K.S. Baboo[2]

Mpika District Community Medical Office[1], University of Zambia School of Medicine[2]

ABSTRACT

Background: Prompt malaria treatment is a key malaria control strategy in Zambia, which has helped to reduce the incidence of malaria and consequently, reduce the infant mortality rate. However, studies done in Zambia show that as low as 19% of children under five years of age are accessing prompt malaria treatment at health facilities. The barriers to this important malaria control strategy need to be established. Therefore, this study aimed at determining barriers to prompt malaria treatment among this vulnerable age group in Mpika district.

Objective: To determine the barriers to prompt malaria treatment among children under five years of age with malaria in Mpika district.

Study design: This was an analytical cross-sectional study conducted in Mpika district of Zambia at eight Rural Health Centres. The study had a sample size of 380 caretakers of under 5 children with confirmed malaria infection; and exit interviews used to collect the data.

Results: The study found that out of the total sample size of 380 participants, only 13.9% of children diagnosed with malaria received prompt malaria treatment. The following were barriers identified to prompt malaria treatment; caregivers residing at a distance of more than five kilometres to the health facility (OR 2.09 95%CI: 1.03 – 4.22 P = 0.041, inadequate household income (OR 2.89 95%CI: 1.18 – 4.39 P = 0.001), self-treatment of children at home with antipyretics prior to seeking care (OR 1.83 95%CI: 1.28 – 3.26 P = 0.018 and lack of community health education (IEC) (OR 2.14 95%CI: 1.10 – 4.13 P = 0.024.

Corresponding author*
Mpika District Community Medical Office
(silweyadavid@yahoo.com)

Conclusion: The findings of this study highlight the factors that negatively influence access to prompt malaria treatment in a rural setting of Zambia. It underscores the need to formulate and implement interventions aimed at fostering appropriate health seeking behaviours that are setting-specific among caretakers of under five children through community health education. There is also need to address the socioeconomic constraints, both at household and health facility level that hinder access to early and effective malaria treatment in children.

INTRODUCTION

Malaria remains a major public health problem and continues to contribute significantly to infant mortality and morbidity in Africa, despite being a treatable and preventable condition [1]. Annually, approximately 300-500 million cases and over 1 million deaths are recorded globally in children below the age of five years [2]. The majority of these malaria infections occur in the sub-Saharan regions were the most complicated forms of the infection are prevalent [3]. Studies done in Zambia show that 40 percent of infant mortality rate; 20 percent of maternal mortality rate and 45 percent of hospital admissions and outpatient department visits in under five children can be attributed to malaria [4, 5]. Prompt malaria treatment is defined as the correct use of an appropriate antimalarial to treat suspected or confirmed malaria within 24 hours of on-set of symptoms [6]. Prompt malaria diagnosis of all childhood febrile illnesses and appropriate treatment is critical in reducing childhood-related morbidity and mortality [7, 8, 9]. The majority of children with fever receive their initial treatment at home and outside the formal health care system [10, 11]. Studies done in Zambia show that, as low as 7.6% of under five children are accessing prompt malaria treatment in rural settings [12,13]. The caregivers' choice of where to seek prompt malaria treatment is

influenced by accessibility to health care, severity of presumed malaria infection and caregivers' level of education [14, 15, 16]. In addition, other factors that have been mentioned include cultural beliefs about the cause, treatment or prevention of malaria, drug stock outs at the health facilities and use of fever relief methods such as antipyretics or herbal medicines prior to taking the child to a health facility [8].

METHODS

This was an analytical study done in Mpika district of Zambia. The sample size of 380 caretakers of under five children with confirmed malaria infection was used and calculated using the formulae for cross-sectional studies; with the assumption that the proportion of under five children who received prompt malaria treatment was 34 percent [12].   The study took place between 30th May 2013 and 14th June 2013, in eight selected rural health centres: Mpika urban, Chilonga, Chalabesa, Kabinga, Kasenga, Zambia National Service and Chibansa. The two-stage sampling was used in the study. The first stage was the sampling of 8 rural health centres using probability proportion to size sampling, from a sampling frame of the 25 rural health centres (RHCs) in Mpika district. Second, was selection of study participants who met the inclusion criteria at each health facility using simple random sampling. The structured interview schedules were used in exit interviews with study participants to collect the data.

Quantitative data was entered into Epi info version 6.04 and analyzed using STATA version 11 software. Logistic regression analysis was used to analyse categorical variables. Only the variables found to be significantly associated with prompt malaria treatment at univariate analysis were entered into the multivariate logistic models, with the crude and adjusted odds ratios with 95% Confidence Intervals and the P values of less than 0.05 used to measure significant variables.
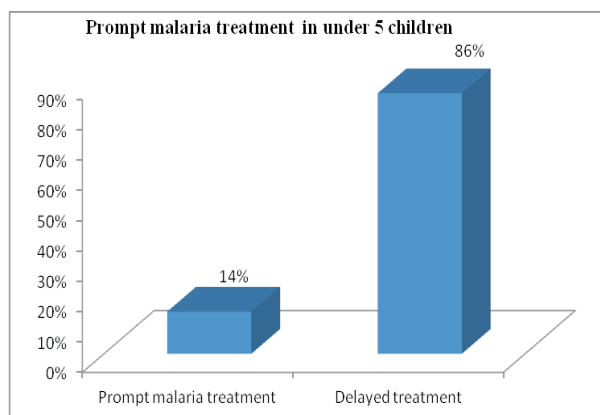
Ethical approval was obtained from the University of Zambia Biomedical Research Ethics Review Committee (Ref: 008-02-13. A written informed consent was provided by all caregivers who took part in the study.

RESULTS

The study found that, as low as 53/380 (14 %) of children diagnosed with malaria received prompt malaria

treatment, while 86.1 % (327/380) were treated after 24 hours or more of onset of malaria symptoms (Figure 1).

Figure 1: Proportion of participants with prompt malaria treatment.

The commonest reason cited for delayed treatment, was the long distances required to travel to reach the health facilities, compounded with lack of financial resources (19.3 %). With regard to malaria knowledge and treatment, 64.5 % (245/380) mentioned fever as a symptom they first saw in their child to suspect malaria illness. The other symptoms mentioned include convulsions (12.1 %), poor appetite (10 %), and vomiting (9.8 %). The commonest antimalarial drug prescribed to these children was Artemether Lufamenthrine (Coartem) (91.5 %). However, the practice of self medication with antipyretics among caregivers was common 55.0 % as shown in Table 1.

Table 1: Characteristics of participants with prompt malaria treatment or delayed malaria treatment.

Prompt malaria treatment	Percentages	
Children treated with an appropriate antimalarial drug within 24 hours of onset of symptoms	13.9%	(53/380)
Children treated with an appropriate antimalarial drug after 24 hours of onset of symptoms	86.1%	(327/380)
Reasons f or delay of treatment		
Didn't think of seeking care	14.4%	(47/327)
No one to take child to health facility	6.7%	(22/327)
No money	19.3 %	(63/327)
Long distance to health facility	31.2%	(102/327)
Child fel l sick at night	28 .4%	(93/327)
Malaria symptoms the child presented with		
Convulsions	12.1%	(46/380)
Fever	64.5%	(245/380)
Poor appetite	10.0%	(38/380)
Vomiting	9.80%	(37/380)
Shivering	1.80%	(7/380)
Diarrhea	1.80%	(7/380)
Initial treatment given to child at home		
Antipyretic	55.0%	(209/380)
Antimalarial	2.40%	(9/380)
Antibiotic	1.10%	(4/380)
Herbal medication	0.50%	(2/380)
Sponging	5.0%	(19/380)
No treatment given	36.0%	(137/380)

Table 2 shows results of a multivariate logistic regression

analysis. When all the significant variables from the univariate model were entered into the multivariate model, the following variables were found to be significant barriers against prompt malaria treatment among children under five years of age: self-treatment with antipyretics prior to taking the child to the health facility (OR 1.83 95%CI: 1.28 -3.26 P = 0.018; caregivers residing at a distance of more than five kilometres to the health facility (OR 2.09 95%CI: 1.03 – 4.22 P = 0.041; household income (OR 2.89 95%CI: 1.18 – 4.39 P = 0.001) and not having health education done in the community (OR 2.14 95% CI 1.10 – 4.13 P = 0.024.

Table 2: Multivariate logistic regression analysis of predictors of prompt malaria treatment in under 5 children in Mpika district.

Risk factor	Prop ortion %	Adjusted odds ratios (OR) (Confidence intervals) (CI)	P values[2]
Initial self treatment at home			
Antipyretics	55% (209/380)	**1.83 (1.28 - 3.26)**	**0.018**
Other treatments	45% (171/380)	1.00	
Distance to health centre			
>5 kilometres	82% (310/380)	**2.09 (1.03 – 4.22)**	**0.041**
<5 kilometres	18% (70/380)	1.00	
Household income			
Not adequate	71% 268/380)	**2.89 (1.18 – 4.39)**	**0.001**
Adequate	29% (112/380)	1.00	
Head of household occupation			
Informal employment	91% (344/380)	2.16 (0.92 – 5.07)	0.075
Formal employment	9% (36/380)	1.00	
Knowledge on malaria transmission			
No	40% (153/380)	2.06 (0.99 – 4.23)	0.054
Yes	60% (227/380)	1.00	
Health education in community			
No	65% (232/380)	**2.14 (1.10 – 4.13)**	**0.024**
Yes	35% (148/380)	1.00	

[2] Tested by multivariate analysis

DISCUSSION

The study explored the barriers to prompt malaria treatment in children aged below five years of age in Mpika district. A wide range of interconnected factors at both household and health system level are said to influence access to early and efficacious malaria treatment in children under five years of age [17]. The study found that an alarmingly low proportion of children diagnosed with malaria received prompt malaria treatment in the rural district of Mpika, a finding consistent with a study done in Blantyre- Malawi [18]. The prompt use of an effective antimalarial treatment was equally low among study participants. In this study, most children with malaria were initially treated with an antipyretic such as paracetamol prior to being taken to the health facility, consistent with the findings from a study done in rural Tanzania [17]. Although antipyretics are widely used as a treatment option for childhood fevers, these are not the biomedically recommended treatment for malaria. Self-treatment of malaria may have many fatal consequences; these home antimalarial remedies results in children presenting with complicated forms of malaria to health facilities [15]. Caretakers in most instances would wait until the illness resolved or subsided, but sometimes it could indeed worsen. At that point, it might be too late; as such delays of even a few days might prove fatal in cases of complicated malaria in children. Attempts should be made to change the behaviour patterns and the mind-set of caregivers, with an emphasis on prompt health seeking behavior as home remedies are not effective treatment for malaria.

The study also found that caretakers living more than 5 kilometre radius from the health facilities were less likely to access prompt antimalarial treatment for their children as it is for any other ailment. This finding is in support of the study done in Uganda, which highlighted that caretakers who travelled greater than 5 km to the health facilities were more likely to have delayed malaria treatment than those that travelled less than 5 kilometres to the health facilities [19].

Long distance has long been pointed out in many studies as a common barrier to formal health care in rural settings [20]. It is clear that long distance makes caretakers adopted a wait-and-see approach [21].

The cost of seeking health care has often been mentioned as a major hurdle to malaria treatment in the sub- Saharan Africa [6]. Inadequate household income was cited as one of the barriers to prompt malaria treatment in the study. This finding is consistent with the fact that household income has a bearing on access to health care services available to the caretaker, as those with adequate income are able to access the health facilities easily as opposed to self-medication. Mpika district is mostly rural, as such, most study participants were peasant farmers with seasonal household income. This, coupled with transport costs and other opportunity costs of taking children to the health facilities instead of farming, interacted to make access to effective malaria treatment more difficult for poor households.

The study demonstrated that luck of community health education on malaria decreased the likelihood of prompt malaria treatment among children below five years of age. To tackle this challenge, there is a need to increase awareness through health campaigns in the communities and schools, via audio-visual means such drama. Although the extent to which such social mobilization campaigns influence change in health seeking behaviours has not been exhaustively investigated, studies that have examined this issue do not consistently show a correlation between care seeking and malaria-related knowledge [6].

CONCLUSION

The results from this study revealed that a low proportion of caretakers of children less than five years of age, are seeking antimalarial treatment promptly at health facilities in Mpika district. The results demonstrates the need to scale up public awareness campaigns to encourage caregivers of under five children to seek antimalarial treatment promptly and use of appropriate antimalarial treatment. Moreover, approaches addressing the problem of distance such as strengthening of the existing outreach programs aimed at bringing quality health care as close to the family as possible, need to be supported. Improving access to prompt malaria treatment will reduce the morbidity and mortality associated with malaria among the under five children in rural settings and ensures that the country attains the Millennium Development Goals 4 and 6, by 2015.

The study had some limitations; it was conducted in selected rural health centres in Mpika district and only among caregivers that sought care at health facilities, thus introducing a form of bias. Despite these limitations, the findings from this study bring to the fore some important barriers to prompt malaria treatment in a rural setting of Zambia, thereby providing a platform on which future malaria control strategies can be formulated. However, there is a need for further research using other methodologies such as focus group discussions, in order to have a much deeper understanding of not only structural, but also the cultural and social factors at play.

REFERENCES

1. Masiye, F. and Rehnberg, C. The economic value of an improved malaria treatment program in Zambia: results from a contingent valuation survey. *Malaria Journal* 2005; 4:60.

2. Teklehaimanot, A. and Bosman, A. Opportunities, problems and prospects for malaria control in sub-Saharan Africa. *Parassitologia* 1998; 41:335–338.

3. Tarimo, D.S., Urassa, D.P. and Msamanga, G.I. Caretakers' perceptions of clinical manifestations of childhood malaria in holo-endemic rural communities in Tanzania. *East African Medical Journal* 1998; 5(3): 93-96.

4. Tuba, M., Sandoy, I.F., Bloch, P. and Byskov, J. Fairness and legitimacy of decisions during delivery of malaria services and ITN interventions in Zambia. *Malaria J* 2010; 9:309.

5 Ministry of Health. *Actions for Scale-up for Impact on Malaria in Zambia.* National malaria strategic plan 2006 – 2010.

6. Chuma, J., Okungu, V. and Molyneux, C. Barriers to prompt and effective malaria treatment among the poorest population in Kenya. *Malar J* 2010; 9: 144. [PubMed]

7. WHO: *The Roll Back Malaria strategy for improving access to treatment through home management of malaria.* Geneva, World Health Organization ; 2005.

8. WHO/UNICEF: *The Africa Malaria Report 2003.* World Health Organization/UNICEF, Geneva; 2003.

9. Schellenberg, J.R., Victora, C.G. and Mushi, A et al. Inequities among the Very Poor: Health Care Children in Rural Southern Tanzania. *Lancet* 2003; 361:561–66. [PubMed].

10. McCombie, S.C. Self-treatment for malaria: the evidence and methodological issues. *Health Policy Plan* 2002; 17:333–344. [PubMed]

11. Williams, H.A. and Jones, C.O. A critical review of behavioral issues related to malaria control in sub-Saharan Africa: what contributions have social scientists made? *Soc Sci Med* 2004; 59:501-23.

12. Zambia Malaria Indicator Survey, 2010.

13. Halwindi, H., Siziya, S., Magnussen, P. and Olsen, A. Factors Perceived by Caretakers as Barriers to Health Care for Under-Five Children in Mazabuka District, Zambia. *ISRN Tropical Medicine* 2013; 10:1155.

14. Miguel, C.A., Manderson, L., and Lansang, M.A. Patterns of treatment for malaria in Tayabas, the Philippines; implications for control. *Trop Med Int Health* 1998; 3:413-421.

15. Muller, O., Traore, C., Becher, H. and Kouyate, B. Malaria morbidity, treatment seeking behaviour, and mortality in a cohort of young children in rural Burkina Faso. *Trop Med lnt Health* 2003; 8(4):290-296. PubMed Abstract

16. Ahmed, S.M. Differing health and health-seeking behavior: ethnic minorities of the Chittagong Hill Tracts, Bangladesh. *Asia Pacific J Public Health* 2001; 13:100-108.

17. Hetzel, M., Iteba, N., Makemba, A et al. Understanding and improving access to prompt and effective malaria treatment and care in rural Tanzania: The ACCESS Programme. *Malar J* 2007; 6: 83.

18. *Holtz, T., Marum, L. and Mkandala, .C et al. Insecticide-treated bed net use, anaemia and malaria parasitaemia in Blantyre district, Malawi. Tropical Medicine and International Health 2003; 7:220–230.*

19. Rutebemberwa, E., Källander, K., Tomson, G et al. Determinants of delay in care seeking for febrile children in eastern Uganda. *Trop Med Int Health* 2009; 9: 435.

20. Baume, C. A Guide to research on care-seeking for childhood malaria. Arlington, Virginia: Sara*, Basics ii* 2002; 46(30): 256-259.

21. Chibwana, A., Mathanga, D., Chinkhumba, J et al. Socio-cultural predictors of health-seeking behaviour for febrile under-five children in Mwanza-Neno district, Malawi. *Malar J* 2009; 8:219.