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Community knowledge and perceptions on the management of non-malarial fevers under reduced malaria burden and implications on the current malaria treatment policy in Morogoro, Tanzania

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ABSTRACT

Objective: To investigate community knowledge and perceptions on the management of non-malarial fevers under reduced malaria burden and the implications on the uptake of artemether-lumefantrine (ALu) for malaria treatment.

Methods: A cross sectional survey was carried out in Morogoro Municipality in March 2015 to examine community knowledge and perceptions on the management of fever among under-fives and effectiveness of ALu for malaria treatment. Household members were interviewed on knowledge of common childhood illnesses, recognition of fever symptom, and illnesses that present with fever; under-fives with a history of fever and malaria test and use of antimalarials in the last two weeks. Notion of whether every fever is due to malaria and the perceived effectiveness of ALu for malaria treatment was also assessed.

Results: Fever was reported in 1146 (69.2%) under-fives, with malaria being the commonest illness (81.8%) which was highly associated with fever (92.1%); other conditions associated with fever were respiratory (60.0%) and gastroenteric (47.8%) conditions. Malaria test was positive in 257/1140 (22.5%) under-fives; however 23.2% received ALu. The large majority (84.6%) had the notion that not all fevers are due to malaria. About two thirds (63.4%) believed that ALu has reduced fever episodes; however only about a half (54.6%) rated ALu as being very effective. More than two thirds (70.4%) of the respondents would prefer to continue using ALu as a 1st line drug.

Conclusions: Fever is still a major health problem recognized to be associated with not only malaria. There is a need for continuous public education that ALu is still effective.

1. Introduction

The advent of improved malaria control regimens such as use of insecticides treated nets and artemisinin based combination therapy has witnessed a decrease in malaria transmission, as well as morbidity and mortality worldwide[1,2]. In Tanzania, malaria incidence and prevalence have decreased in most parts of the country as shown in national surveys of August, 2007

and December, 2011 whereby the overall prevalence of malaria among under-fives dropped from 18.1% to 9.7%[3,4]. The decline was observed in all geographical zones and in both surveys. The lake, southern and western zones had the highest prevalence while the northern and southern high land zones had the lowest prevalence. The decline has also been demonstrated by area specific studies in some part of the country[5].

It is not known whether communities are knowledgeable that the observed decrease in malaria burden has resulted from the wide scale use of available malaria control tools such as artemisinin based combination therapy of artemether-lumefantrine (ALu) and insecticides treated nets. To sustain the gain in reduction of malaria burden, communities must be convinced of the effectiveness of the current malaria interventions for the reduction of malaria associated fevers, so as to consistently continue to implement the interventions. A reduction in malaria infection should plausibly translate itself into a reduction of

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The study protocol was performed according to the Helsinki Declaration and approved by the Muhimbili University of Health and Allied Sciences. Informed verbal consent for participation in the survey was obtained from each participant.

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fever episodes among under-fives. However, it is not clear that how much reduction of malaria infection has translated itself into a reduction in the proportion of fever episodes reported among under-fives at the household level. In addition, it is not known whether communities are knowledgeable that not every fever is due to malaria and that as fevers resulting from malaria decline, fevers due to non-malarial causes will take precedence as a common cause of attendance to a health facility. How this would influence treatment seeking for febrile illnesses and the demand for appropriate management of malarial and non-malarial fevers is not known[6,7]. Therefore, this study aimed to examine community recognition of childhood malarial fevers, their perceptions on effectiveness of ALu and the management of non-malarial fevers under reduced malaria burden. Findings from this study shall inform policy makers the need for specific educational messages to create community awareness on the non-malaria causes of fever and motivation towards current guidelines for fever management including laboratory testing for malaria before use of ALu and counseling for a negative malaria test and follow up[8].

2. Materials and methods

The study was conducted in Morogoro urban district, Southeastern Tanzania. A prominent feature of the district is the hot weather throughout the year with two rainy seasons: short rains (October–December) and long rains (February–May); these conditions make the district to have intense perennial malaria transmission[2]. A cross sectional survey was carried out in 1 885 randomly selected households in March 2015 to examine community knowledge and perceptions on the management of non-malarial fevers under reduced malaria burden, recognition of the reduction in childhood malaria burden and attribution of the reduction to the malaria interventions in place. Data were collected by third-year medical students who had completed their training in control of communicable diseases. Questionnaire interviews were conducted with the male or female head of household to obtain information on community knowledge on the common childhood illnesses, recognition of fever symptoms and illnesses that present with fever, under-fives with a history of fever and malaria test in the last two weeks, history of using antimalarial drug in the last two weeks, notion that whether every fever is associated with malaria, perceived effectiveness of ALu and need for a policy change.

2.1. Data management

Data were cleaned, entered, processed and analyzed by using SPSS version 21. As a pure descriptive study, explorative analysis was done by using frequency distribution of the variables of interest.

2.2. Ethical considerations

The study protocol was performed according to the Helsinki Declaration and approved by the Muhimbili University of Health and Allied Sciences. Permission to enter the community was

obtained from the regional and district administrative authorities. Informed verbal consent for participation in the survey was obtained from each participant.

3. Results

A total of 1 655 respondents were interviewed, the majority being the female parent (84.8%) and married (61.7%) heads of household. About three-fifths (59.9%) had received primary education (Table 1). A total of 1 146 under-fives (69.2%) were reported to have had fever two weeks before the survey. Malaria was reported as the most common childhood illness (81.8%) (Table 2). The major fever symptom was the body being hot (92.2%), and the fever was reported to be associated with malaria (92.1%). Other conditions associated with fever were respiratory (60.0%) and gastroenteric (47.8%) conditions. There was a very high recognition of the major constitutional symptoms of malaria in children, namely, raised body temperature (92.8%), prostration (61.1%), gastroenteritis (67.2%) and inability to feed (64.8%) (Table 3).

Table 1
Socio-demographic characteristics of the respondents.

Characteristics	n	%	
Type of respondent (n = 1 655)	Female parent	1 403	84.8
	Male parent	98	5.9
	Care giver	154	9.3
Age group (years) (n = 1 653)	13–34	1 256	76.0
	35–44	297	18.0
	Above 45	100	6.0
Marital status (n = 1 654)	Not married	329	20.0
	Married	1 021	61.7
	Divorcee	106	6.4
	Co-habiting	198	12.0
Level of education (n = 1 653)	No formal education	151	9.1
	Primary education	990	59.9
	Secondary and above	512	31.0
Occupation (n = 1 649)	Peasant	141	8.6
	Housewife (depend on spouse)	624	37.8
	Petty business	692	42.0
	Employed (public/private)	154	9.3
	Others	38	2.3

Table 2
Common childhood illnesses, recognition of fever symptoms and illnesses that present with fever (n = 1 655).

Attribute	n	%	
Common childhood illnesses	Malaria/malarial fevers	1 354	81.8
	Periodic fevers	783	47.3
	Respiratory conditions	899	54.3
	Gastroenteric conditions	737	44.5
	Convulsions	154	9.3
Fever symptoms	Hot body	1 526	92.2
	Raised temperature	1 110	67.1
	Sweating	732	44.2
	Shivering	582	35.2
	Illnesses that present with fever	Malaria/malarial fevers	1 524
Respiratory conditions		992	60.0
Gastroenteric conditions		791	47.8
Septic wounds		413	25.0
Convulsions		260	15.7

Of the 1 140 under-fives sent for malaria test, 257 (22.5%) were positive for malaria; however 23.2% received an antimalarial treatment; the most commonly prescribed antimalarial was ALu as shown in Table 3. Only a small percentage (0.7%) of those receiving an antimalarial drug was negative for malaria test. The large majority (84.6%) had the notion that not all fevers are due to malaria. Close to two thirds (63.4%) of the respondents held the perception that adoption of ALu as the 1st line antimalarial drug has led to a reduction in fever episodes among under-fives; however only about a half (54.6%) believed that ALu was very effective while 41.9% rated ALu as being moderately effective to not effective (Table 4). Nevertheless, more than two thirds (70.4%) of the respondents would prefer to continue using ALu as a 1st line drug.

Table 3

Recognition of childhood malaria symptoms and use of antimalarial drugs.

Attribute		n	%
Symptoms of malaria in under-fives (n = 1 653)	Hot body/raised temperature	1 534	92.8
	Prostration	1 010	61.1
	Diarrhoea/vomiting	1 111	67.2
	Inability to feed	1 071	64.8
	Shivering/sweating	625	37.8
	Palmar pallor	213	12.9
	Convulsions/fits	311	18.8
Under-fives sent for malaria test (n = 1 140)	Positive for malaria	257	22.5
	Negative for malaria	883	77.5
Notion that all fevers are due to malaria (n = 1 648)	Yes	254	15.4
	No	1 394	84.6
Under-fives administered with antimalarial drug in the last two weeks (n = 1 140)	Yes	265	23.2
	No	875	76.8
Type of antimalarial drugs given in the last two weeks (n = 265)	ALu	208	78.5
	Fansidar, Metakelfin, Orodar	27	10.2
	Quinine	16	6.0
	Amodiaquine	8	3.0
	Others	6	2.3

Table 4

Perceived effectiveness of ALu, preference to continue using ALu and need for policy change.

Attribute		n	%
ALu has reduced fever episodes in under-fives (n = 1 648)	Yes	1 045	63.4
	No	603	36.6
Degree of effectiveness (n = 1 643)	Highly effective	897	54.6
	Moderately effective	480	29.2
	Not effective (too long to subside fever)	208	12.7
	Experts know, I just take	58	3.5
Preference to continue using ALu after 8 years of use (n = 1 643)	Yes	1 157	70.4
	No	263	16.0
	Not decided/sure	223	13.6

4. Discussion

The fact that more than two thirds of the under-fives were reported to have had fever two weeks prior to the survey confirms that fever is still a major cause of attendance to a health facility. Following the decline in malaria related fevers, majority of fever consultations would be due to non-malaria causes of fever[9]. It is therefore important for the communities to understand this scenario so as to

properly manage under-fives with non-malarial fevers. Though there has been a major decline in malaria transmission in Tanzania[10], which refers to a reduction in reported fever episodes, this will not be the case for the non-malarial fevers. Previous studies have demonstrated that communities equate fever or “hot body” with malaria, thus all other illnesses associated with fever will be equated with malaria; hence malaria has been reported as the most common childhood illness[11]. From the biomedical point of view, fever has many aetiologies[12], which is in line with the observed community recognition that fever is not only associated with malaria, but also associated with other conditions like respiratory tract and gastroenteric infections, further emphasizing the importance of non-malaria causes of fever[13]. With malaria transmission declining in many parts of Africa[1,2], there is increasing awareness that fever (raised body temperature) due to causes other than malaria is a common cause of outpatient attendance to health facilities in malaria endemic settings[8,9].

From the biomedical point of view, the major constitutional symptoms of malaria in under-fives, namely, raised body temperature, prostration, gastroenteritis (diarrhea/vomiting) and inability to feed, are not specific to malaria as they can also be caused by other infections[12]. This is in line with the observation that only less than a quarter (22.5%) of the under-fives referred for malaria test were reported to be positive for malaria. In a recent study, it was established that majority of under-fives with fever probably have infectious agents other than malaria[9]. Public health campaigns by the Ministry of Health and Social Welfare propagandizing that not all fevers are due to malaria seems to have been diffused very well as the large majority (84.2%) of the community members had the notion that not all fevers are due to malaria. This highlights the need to maintain adequate malaria tests for confirming malaria as studies done at the time when every child with fever would presumptively be treated with an antimalarial drug showed that communities were already aware of other possible causes of fever in their under-fives and would demand for a laboratory confirmation of malaria to get an accurate treatment; and they were knowledgeable that incorrect diagnosis would lead to an incorrect treatment and consequently to a poor treatment outcome[14]. The community expectation is that a malaria test should also be able to identify the other non-malarial causes of fever, so that if the test is negative for malaria, they should also be told the other causes of the febrile illness[15].

The advent of point-of-care rapid diagnostic tests for malaria presents to both health care providers and clients with a new challenge of identifying the other causes of febrile illness and providing the appropriate course of action for patients who are negative for malaria[16]. Findings from this study showed a very high adherence to malaria test results as only a small percentage (0.7%) of those reported to have received an antimalarial drug was negative for malaria. The fact that only about a half (54.6%) rated

ALu as being very effective is perhaps because the fever due to other non-malaria causes would not respond to an antimalarial. This calls for continuous public education to emphasize that ALu is still effective, so as to maintain the motivation of the community to continue using ALu as the 1st line drug. Since perceived effectiveness/efficacy is a central component of acceptability and uptake of a drug, in the absence of appropriate counseling for whether fevers are due to malaria, clients are likely to lose trust on the effectiveness of the interventions that have been shown to work, including ALu[17].

Fever is still a major health problem; it is recognized to be associated with not only malaria. There is a need for continuous public education that ALu is still effective.

Conflict of interest statement

I declare that I have no conflict of interest.

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