HEALTH WORKERS PERCEPTIONS ON CHLOROQUINE AND SULFADOXINE / SULFALENE - PYRIMETHAMINE MONOTHERAPIES: IMPLICATIONS FOR THE CHANGE TO COMBINATION THERAPY OF ARTEMETHER / LUMEFANTRINE IN TANZANIA.

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Abstract

Objective: To describe, from health workers (HWs) perspectives, the potential and actual barriers to the implementation of the first change of policy from chloroquine (CQ) to Sulfadoxine / Sulfalane – Pyrimewthamine (SP) in preparation for the second change of policy to Artemisinin based Combination Therapies (ACTs).

Methods: A descriptive cross-sectional survey of HWs using questionnaire interviews was carried out in public and private health facilities in Songea Urban district. The interview concerned awareness and knowledge on the commonly used antimalarial drugs as given in the new policy, focusing on SP use and the associated side effects as well as perceptions on the potency and safety of SP versus CQ and the perceived alternative antimalarial drugs to non-response or reaction to SP.

Results: Awareness on the new policy was very high; 91.4% of HWs were aware that SP was the new drug. Although the majority of HWs (81.9%) reported using the new policy as soon as it was out, a significant percentage (76.2%) reported continued use of SP (P-value < 0.001). SP was perceived to have a low potency in that it was slow in fever clearance. A significant percentage (65.7%) of HWs reported a history of problems with SP use namely headaches and skin reactions. Quinine (QN) was significantly frequently mentioned as the perceived alternative drug to CQ (61.1%) and non-response (56.6%) or reaction (54.1%) to SP.

Conclusion: Findings show that SP was generally not preferred by HWs, and they continued to use CQ despite the evidence that it was no longer effective indicating that. HWs tend to maintain perceptions based on their experiences with drugs currently in use. Pertinent information, education and behaviour change communication strategies related to the change from SP to ACT should focus on the fact that the previous drug is no longer effective so as to induce consistent use of the new drug.

Key words: Perceptions, Chloroquine, Sulfadoxine / Sulfalene-Pyrimethamine, Artemisinin Combination Therapy, policy change, Tanzania.

Introduction

From early 1990s, the incidence of *Plasmodium falciparum* malaria in Africa has been increasing parallel with the rapid expansion of resistance to first line monotherapies (1,2). For over four decades, Chloroquine (CQ) was the main drug for malaria treatment in Africa but from the 1980s its clinical efficacy precipitously declined leading to a trend of increasing malaria morbidity and mortality (3). Consequent to the declining CQ efficacy a number of African countries adopted Sulfadoxine / Sulfalene – Pyrimethamine (SP) monotherapy as 1st line drug (4). Clearly the adoption of SP as a 1st line drug was an interim measure as experience from South East Asia indicated that in areas with high intense malaria transmission as in much of sub-Saharan Africa, SP monotherapy can hardly maintain a useful therapeutic life of five years (5).

The efficacy of CQ in Tanzania started going down from the early 1980s (6) and by early 1990s, resistance had grown past the 25.0% level for change (7). In mid 1999, the Ministry of Health endorsed a strategic plan for the implementation of a policy change from CQ to SP by August 2001 and National Guidelines were put in place with SP as the 1st line drug, AQ and QN as the 2nd and 3rd line drugs respectively (8).

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However, the use of any antimalarial drug is influenced by socio-behavioural factors such as familiarity with the drug, perceived potency and safety which may compromise adherence and therefore impact on morbidity and mortality (9). Thus, prior to the change of policy from CQ, SP was judged to be a stronger drug that should replace QN as a 3rd line drug, and was particularly too strong for use in children hence Quinine was commonly being used as a 2nd line drug instead of SP (10).

This study describes health workers' perceptions on the first change of malaria treatment policy in Tanzania for which SP was adopted as the 1st line drug as an interim measure. The aim was to generate from the health workers information that would highlight the actual or potential barriers to the implementation of new malaria therapy policies in preparation for the second policy change to Artemisinin based Combination Therapies (ACTs).

Materials and Methods

Study site

The study was carried out in Songea urban district a holoendemic area of Tanzania mainland during the first policy change of malaria treatment in Tanzania prior to the adoption of ACT in Tanzania. Hospital data show that malaria contributed to about 60% outpatient and 65.6% inpatient attendances, and was responsible for 44.0% deaths, being the leading cause of hospital deaths.

Study population and design

A descriptive cross-sectional survey of health workers was carried out in public and private health facilities in Songea Urban district from May to June 2002. The health workers included clinicians / prescribers (medical officers, assistant medical officers, clinical officers and assistant clinical officers), nurses (nursing officers to nurse assistants), pharmacy (pharmacist, pharmaceutical technician and pharmaceutical auxiliary/assistant) and laboratory (laboratory technologist and laboratory assistant/auxiliaries) staffs constituting a total of 171 health workers. A purposeful sampling procedure was adopted so as to obtain a manageable sample of 105 health workers for the interview that was complemented with an exit review of 105 treatment cards/ books of patients attending to the health facilities during the survey. Using a lottery method, dispensaries were randomly selected using two sampling frames i.e. public and private dispensaries to obtain 5 public and 6 private dispensaries included in the survey. Health workers on duty for outpatient services and those on afternoon shift were recruited into the study.

The data was collected by a structured interview schedule using questionnaires with open-ended questions. The interview concerned awareness and knowledge on the commonly used antimalarial drugs as given in the new policy, focusing on SP use and the associated side effects as well as perceptions on the potency and safety of SP versus CQ and the perceived alternative antimalarial drugs to non-response or reaction to SP. This was complemented with exit reviews of treatment cards / books of malaria outpatients so as to validate health workers adherence to the new policy in terms of their actual habits of prescribing and dispensing SP. A physical inspection was carried out at the health facilities to assess the commonly stocked antimalarial drugs in favour of the new policy.

Data analysis

On each day, the data were cleaned and validated so as to ensure consistency, entered into the SPSS version 10.1 statistical package. Explorative analysis was carried out to assess health workers awareness and knowledge of the new policy as well as their perceptions of SP use as the 1st line drug. Proportions were compared by the Chi-square test provided in the EPI table calculator. Because of the paucity of data, association of the respondent's cadre with knowledge and perceptions on SP use was limited to clinicians / prescribers and nurses only using the Chi-square test provided in the EPI table calculator. Significance was set at the 0.05 level.

Ethical considerations

The Muhimbili University College of Health Sciences (MUCHS) ethical committee cleared the study; permission to carry out the study was sought from the district local authority. The purpose of the study was clearly explained to the health workers and informed consent sought before the interviews. Likewise, the purpose of the study was clearly explained to patients / care givers exiting from the dispensing area and informed consent sought before the review of the treatment cards / books.

Results

A total of 105-health workers from 13 out of 17 (76.5%) health facilities in Songea urban district were studied; these included 1 hospital and 1 health centre (public) and 11 dispensaries (5 public and 6 private). Thus public health facilities formed 41.2%, and privately owned formed 35.3%. Of the studied health workers, 64 (61.0%) were females (mean age: 38.4 ± 1.0) and 41 (39.0%) males (mean age: 43.8 ± 1.5). A total of 105 out patient's medical cards or treatment books of patients exiting from the dispensing areas were reviewed. The commonly stocked antimalarial drugs were SP, AQ & QN

About two thirds (62.8%) of the health workers (62.8%) had a secondary education (form I – VI), the rest had only primary education. The majority of the health workers (84.8%) consisted of clinical and nursing staffs, the rest being either laboratory or dispensing staff.

QN was significantly frequently mentioned (61.1%) as the perceived alternative antimalarial drug for the replacement of chloroquine (P-value < 0.05) (Table 1).

Majority of the heath workers (95.2%) were knowledgeable on the new policy for uncomplicated malaria case management, thus majority (91.4%) of the health workers mentioned SP as the 1st line drug, while only a few mentioned QN (6.7%) and AQ (1.9%). Although the majority (81.9%) reported using the new policy as soon as it was launched, paradoxically a highly significant percentage of the health worker (76.2%) reported continued used of CQ even after the policy change (P-value < 0.05). The responses on perceived chloroquine efficacy, last chloroquine use and alternative antimalarial drugs to chloroquine were not significantly different among clinicians and nurses (P-value > 0.05).

Table 1: Frequency of the perceived alternative antimalarial drug for the replacement of chloroquine (N=146)

Alternative antimalarial drug to CQ	N0	Percentage (%)
Quinine	90	61.6
SP	35	24.0
Amodiaquine	11	7.5
Halofantrine	4	2.7
Artemisinin derivatives	4	2.7
Undecided/don't know	2	1.4

N.B: Findings based on multiple response analysis of frequency of events.

Although not statistically significant (P-value > 0.5) a high percentage of the health workers (53.3%) held the perception that clinical the response to SP is not good. The perceived reasons for the lack of good clinical response were that SP does not have a rapid parasites clearance (57.1%), is not well known and has a lot of side effects hence not trusted (38.1%), as well as not lowering fever fast (8.6%), thus being not as strong as CQ (2.9%) in the clinical remission of malarial disease. Compared to AQ (36.3%), QN was significantly most frequently reported (56.6%) as the perceived alternative treatment option for non-response to SP (P-value < 0.05) (Table 2).

Table 2: Frequency of perceived alternative treatment options for non-response to SP (N=113)

Perceived alternative antimalarial drug	No	Percentage (%)
Quinine	64	56.6
Amodiaquine	41	36.3
Artemisinin Derivatives	6	5.3
Don't Know	2	1.8

N.B: Findings based on multiple response analysis of frequency of events.

A significant percentage of the health workers (65.7%) reported a previous history of problems with SP use (P-value < 0.001) such as skin reactions including mild (42.9%) and severe (32.7%) cutaneous reactions as the significantly reported SP side effect (P-value < 0.001) (Table 3).

Allergy to any drug or specifically sulphonamides including SP (61.8%) was highly significantly reported as the most frequently known contraindication to SP (P-value < 0.001) (Table 4).

Although not significant (P = 0.06), quinine was the most frequently reported (54.1%) alternative therapy for patients who react to SP, followed by AQ (42.0%). The majority (90.5%) of the health workers held the perception that sulfadoxine-pyrimethamine (SP) is not as rapid in fever clearance as chloroquine. The perceived reasons for slow fever clearance by SP were that SP is a slow acting drug (55.1%) and lacked antipyretic effects (24.5%) (Table 5).

Table 3: Frequency of reported adverse effects due to sulfadoxine-pyrimethamine (SP) (N=98)

Adverse effects	No	Percentage
Mild cutaneous reactions	42	42.9
Severe muco-cutaneous reactions (Stevens Johnson syndrome)	32	32.7
Severe headache	19	19.0
Gastro-intestinal disturbances	3	3.0
Kernicterus in new born	2	2.0

Table 4: Frequency of the known SP contraindications as reported by health workers (N=204)

Contraindications	No	%
Allergy to any drug (oral or parental)	51	25.0
Allergy to sulphonamides or specifically to SP	75	36.8
Late pregnancy (more than 36 weeks of gestation) and new born	56	27.4
Others (severe vomiting kidney disease, severe illness, SP treatment failure, early pregnancy)	13	6.4
Don't know/not sure	9	4.4

N.B: Findings based on multiple response analysis of frequency of events.

Table 5: Perceived reasons for slow fever clearance by SP (N=98)

Attribute	No	Percentage
Slow acting	54	55.1
No antipyretic effects	24	24.5
Not as 'strong' as chloroquine	2	2.0
Too 'strong' (causes fever to rise)	3	3.1
Don't know/not sure	15	15.3

Discussion

This study investigated health workers perceptions on the use of SP as 1st line drug for uncomplicated childhood malaria in Songea urban district focusing on awareness and knowledge of the new policy and the perceived potency and safety of SP in comparison to CQ. According to the new policy, SP should be the 1st line, while AQ and QN are the 2nd and 3rd line drugs respectively (8). Although the findings show that the three drugs are commonly used for malaria treatment in accordance to the policy, surprisingly CQ was still in use as it was perceived to be potent still; leading one health worker to make this note: "in my family we still use CQ as it works." Thus, although majority of the health workers were aware of the policy change and reported using the new policy as soon as it was out, a significant percentage of the health workers reported continued use of CQ as the 1st line drug. This finding implies that once the new policy of malaria treatment using Alu is in place, health workers already familiar with monotherapies of SP, AQ & QN might advise patients to continue using the monotherapies interchangeably.

Prior to the first policy change, health workers held the perception that QN is the best alternative drug to CQ indicating that, although SP was the 2nd line drug, it was less known hence not commonly preferred by the health workers. Similar observations were made in the holoendemic Kibaha district whereby prescribers at the district hospital, health centres and dispensaries most frequently preferred to use QN instead of SP for suspected or proven cases of CQ failure (10).

A number of factors such as long familiarity to the monotherapies may influence health workers towards their preference (9). Biomedically the objective measure of drug potency is the clinical and parasitological response. However for individuals, families and communities, the

objective measure of potency rests on collective social influences such as long history of using the drug and individual experiences with the drug in terms of treatment successes or failures (9,11).

The change from single dose regimen of SP administered once to six dose regimen of Alu administered twice over three days presents a major challenge to adherence as it may induce health workers perceptions in different directions. Health workers might maintain the perceptions that SP is stronger than Alu and advice patients to continue using SP monotherapy as 1st line drug. Alternatively Health workers might maintain the perceptions that the six dose regimen of Alu would be too strong for some categories of patients such as very young children leading to reluctance to prescribe Alu to them despite being the most vulnerable category (12).

In this study cutaneous and muco-cutaneous reaction were the most commonly reported SP side effects and at the time of the study there was one patient with Stevens Johnson syndrome at the district hospital. Clearly the side effects would potentially induce negative perceptions to the new drug hence the need to document and report any adverse events.

Conclusions and recommendations

Majority of health workers held the perception that clinical responses to SP were not good and in some instances CQ was still in use despite policy change. There was the general preference to use QN as an alternative to non-response or contraindication to SP and as a 2nd line drug before and after the policy change. Most health workers were knowledgeable on the indications and contraindications of SP and were specifically aware of the associated adverse reactions. Pertinent information, education and communication and behaviour change communication strategies related to change of policy to ALu should focus on the fact that the previous drug is no longer effective.

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