POOR KNOWLEDGE ON NEW MALARIA TREATMENT GUIDELINES AMONG DRUG DISPENSERS IN PRIVATE PHARMACIES IN TANZANIA: THE NEED FOR INVOLVING THE PRIVATE SECTOR IN POLICY PREPARATIONS AND IMPLEMENTATION

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Abstract

Objective: To assess the knowledge of dispensers in private pharmacies on new malaria treatment guidelines which involved switching from chloroquine (CQ) to sulfadoxine pyrimethamine (SP) and from SP to artemether-lumefantrine.

Methods: A structured questionnaire was used for data collection and the questions focused on whether the subjects were involved in the preparation or implementation of the guidelines or had undertaken any training on how to dispense new antimalarial medicines as recommended in the introduced new treatment guidelines.

Results: The study revealed that none of the participants had been involved in the preparation of the treatment guidelines, nor had they undertaken any training on their implementation. As many as 49% of the visited private pharmacies were found to continue stocking and selling CQ tablets and injections. Only 30% and 7% knew the correct dose regimen of SP and ALU respectively and none of them knew the condition of taking ALU with a fatty meal for improved absorption.

Conclusion: Lack of involvement of the pharmaceutical personnel working in the private pharmacies, from the preparation of new malaria treatment guidelines to their implementation, contributed to their poor knowledge and skill on how to correctly dispense the medicines.

Key words: Knowledge, Drug Dispensers, Private pharmacies, Malaria treatment guidelines

Introduction

Tanzania changed its line antimalarial medicine for treatment of uncomplicated Plasmodium falciparum malaria from CQ to SP in August 2001 (1). Amodiaquine became the second line treatment of choice after SP. Not quite long after this decision, reports of high failure rates of SP began pouring in from across the country. Resistance against SP was observed in many other countries (2,3).

Artemisinin based combination therapies (ACT) have recently been received with great hope as a major breakthrough in the treatment of malaria in many malaria endemic areas including Tanzania(4). Therefore, the Tanzania Ministry of Health and Social Welfare in 2005 made decision to switch from SP to ACT particularly combination of artemether and lumefantrine (ALU) as the first line antimalarial drug and the changes were officially reinforced in 2006 (5). However, dosage regimens of most ACTs are rather more complicated in comparison to a single dose needed for SP. The challenge for the successful outcome of the use of ACTs, therefore, is posed by the requirement for provision of proper knowledge for both the health care providers and the patients, who are the end users.

Experience has shown that good treatment policies and guidelines may be put in place and yet disappointing results are obtained due to wrong interpretation and implementation (6). An active intervention process, ranging from provision of accurate information, education, sensitisation and community involvement is needed before any future drug policy change is effected in the country (6,7).

Irrational drug use is contributed by many factors including care providers giving wrong drug information to patients (8). Dispensing staff in private pharmacy shops play a significant role in pharmaceutical management and provision of relevant information to clinicians and patients, thus enhancing the improvement of rational medicine use (9). It is estimated that 60 to 80% of the population in developing countries seek treatment from private medicine outlets (10). However, the private pharmaceutical sector has been associated with irrational dispensing and provision of poor quality medicines (10, 11). Dispensing personnel in the private pharmacies rely mostly on leaflet inserts or drug company salesmen as their primary source of information on medicines (12). Sales promoters are, in most cases, not sufficiently educated to provide reliable and unbiased information since their income is largely dependent on the volume of sales (12).

Eriksen and co-workers have recently reported a positive impact of community sensitisation seminars and Integrated Management of Childhood Illness (IMCI) training conducted in one district in Tanzania. The training improved the knowledge of mothers of under-fives on malaria treatment guidelines (7).

So far there is no report on the extent of the involvement of the private medical shop personnel in the preparation of the treatment guidelines or their participation in the pre-implementation training. This study reports on lack of adequate knowledge of dispensing personnel in private pharmacies on the recommended antimalarial drugs in terms of dosage regimen, counselling on the proper conditions for drug intake, the expected side effects and adverse reactions and their management. The study took into consideration the country’s malaria treatment policy changes from CQ to SP and from SP to ALU. The data being presented in this paper is it based on data from phase 1 and phase 2 studies.
Methods

Study areas and population

This was a cross-sectional descriptive study conducted in private pharmacies located in Dar es Salaam. Dar es Salaam has the highest number of private pharmacies in Tanzania, therefore reflecting the magnitude of the problem in the country. The antimalarial drugs are legally allowed to be sold as over the counter (OTC) medicines in private pharmacies in Tanzania. The study was divided into two phases. The first phase was conducted between February and June 2003 with the objective of investigating the knowledge on the effects of changing the policy from CQ to SP. The second was conducted between March - July, 2007 to investigate the knowledge after changing the policy from SP to ALU.

Ethical Clearance

This study was part of a Muhimbili University College Capacity Strengthening Project and was funded by the Muhimbili University College of Health Sciences (MUCHS). Ethical clearance was given by MUCHS Research Ethics Committee. The permission to conduct the study in pharmacies was sought from Tanzania Food and Drug Authority (TFDA) and the owners/in charges of the pharmacies.

Permission to interview the dispensers was sought from the pharmacist in-charge and the owner of the premises. The dispensers were informed on the purpose of the study and its importance and were asked to give their consent for participation in the interview.

Study design

Sample size and sample selection

This was a cross-sectional study involving pharmacies located in Temeke, Kinondoni and Ilala districts. The names of pharmacies available in Dar es Salaam were obtained from a list provided by the TFDA. In total 601 pharmacies were visited. Out of these 601 pharmacies, 451 and 150 were visited during the assessment of CQ to SP and SP to ALU respectively.

The selection of pharmacies was based on random sampling process in which pharmacies available in each district were firstly listed and assigned numbers. Each number was labelled on small card and the cards were placed in a plastic bag. Simple random sampling based on picking the card was conducted. Only those pharmacies whose numbers were picked were involved in the study. Eligible pharmacies were those involved in Medical Part II shops known as medical stores and are mostly attended by personnel with no or little pharmaceutical knowledge. Since we wanted to assess the knowledge of pharmaceutical personnel, it was important to focus only on pharmacies where the probability of getting either a pharmacist, a pharmaceutical technician or a pharmaceutical assistant was high. The exclusion criterion was difficulty in accessing the premises and a pharmacy which was regularly found closed during our visit. The 451 pharmacies visited in the first phase were randomly selected from a list of 560 pharmacies. However, of the selected pharmacies, 50 were regularly found closed during our visit, so they were excluded from the study ending up with 401 pharmacies only. We suspected that these pharmacies either had not employed pharmaceutical personnel or had other legal inadequacies and so they feared that some information could be passed to TFDA which could jeopardize their business and therefore they decided to close until they certain of no longer being visited by our team. For the second phase study of SP to ALU, 150 pharmacies were randomly selected. As opposed to the Phase 1 study which involved switching from CQ to SP in which 401 dispensers were involved, we selected only 150 pharmacies for Phase 2 study based on the previous experience we obtained in Phase 1. In Phase 1 we found a number of pharmacies which had no capacity to stock adequate antimalarial drugs and some of them were too busy to provide systematic and smooth interviewing process. No refusal or drop-outs were experienced in Phase 2.

Data collection

The first phase was conducted between February and June 2003 with the objective of investigating the knowledge on the effects of changing the policy from CQ to SP. The treatment policy to SP was officially launched in July 2001. The second phase study was conducted between March and July 2007. The new malaria treatment policy to ALU was officially effected at the end of 2006.

The questionnaire consisted of closed and open-ended and translated into Swahili language. The questionnaire was administered by research assistants (RAs) who spent a day with the investigators discussing on how to collect the data. The RAs pre-tested the questionnaire in at least 4 pharmacies of each study district. The pharmacies used in the piloting study were not included in the actual study. The questionnaire was amended and used in data collection. The questions addressed the awareness of the personnel on the new malaria treatment policy changes and the treatment guidelines, the types of antimalarials stocked and sold at the premises and the knowledge on the dosage regimens of SP, AQ and ALU. Levels of education, if and when the personnel attended a continuing education course and their participation in the preparation and implementation of the new policies were also asked. Our main targets were pharmacists, pharmaceutical technicians, pharmaceutical assistants specifically those who were directly involved in dispensing medicines. However, other categories of workers who claimed to be involved in the dispensing of medicines were also interviewed.

Data management and analysis

The completed questionnaires were checked and only those questionnaires which were correctly completed were used for data management. For data entry and analysis, we used an experienced statistician who instructed our data entrant on how to code the responses and enter them in the computer. The responses to questions were coded and processed using a computer software (SPSS® USA, 2005). Data cleaning was conducted so as to take hold of
data inconsistencies and other errors. Data analysis was carried out by using descriptive statistics including frequencies and crosstabulations and the findings are summarized in tables of results. Results were considered statistically significant if p-values were ≤ 0.05).

Results

In the first phase of the study a total of 451 private pharmacies were visited. Altogether 401 dispensing personnel (one personnel per pharmacy) were interviewed. The other 50 pharmacies were always closed during our visit so they were excluded from the study. In the second phase 150 visited pharmacies were interviewed. Categories of dispensing personnel who were interviewed are shown in Table 1.

The respondents were aware of the changes of the treatment policies, particularly the change from CQ to SP. However, only 40% of the personnel were aware that SP was going to be replaced with ALU.

As many as 11% of the shops stocked and dispensed CQ (Table 2). The majority (90%) of the personnel in these shops reported that the instruction to stop dispensing the medicine was given by the TFDA on too short notice after the approval and implementation of the policy changes. They also reported that large stocks of CQ had piled up in the stores as a result of complying with this instruction and that no clear approach had been given by the TFDA on how the remaining stocks were to be disposed of.

Seventy-five percent (75%) of the dispensers reported receiving the information on malaria treatment policy changes over the radio and other news media. Lack of knowledge in dosage regimens for SP and AQ was observed in most of the dispensers, including pharmacists. They counselled their clients to take a repeat dose of 3 tablets of SP after 7 days if there was no recovery from illness or if malaria parasites were still present in the blood (Table 2). This is contrary to the provision in the treatment guidelines, which categorically states that the medicine should be taken as a single dose, and, in the case of treatment failure, a second line treatment option (AQ) should be recommended (1).

The majority of the personnel could not tell how doses of AQ were calculated. Their knowledge in paediatric doses, both for SP and AQ, was also relatively low. The knowledge in the dosage regimen of ALU was much worse; nearly 93 % of the respondents could not tell the dosage regimen for adults without referring to leaflet inserts found in the packages. The dispensers reported that they had not had the opportunity to participate in any seminar or training related to the new malaria treatment guidelines before or during the implementation of the new treatment policy.

Over 90% of the pharmaceutical personnel also admitted that they had not attended any continuing medical education (CME) course after completing their basic training. Most of the participants reported that they had no access to the internet and acknowledged that they were not of the habit of updating themselves on drug related issues.

Discussion

This study revealed that dispensers in private pharmacies in Dar es Salaam had poor knowledge in providing accurate information to patients on the dosage of the new antimalarials and likely side/adverse effects as well as instructions on how to take the medicines. This finding is in agreement with the fact that the participants had not been involved in the preparation of or training on the new treatment guidelines before the antimalarial policy changes were implemented.

Pharmaceutical personnel involved in dispensing medicines are the professionals responsible for counselling patients on all matters related to, and leading to rational medicine use. To accomplish this responsibility, these professionals need to be equipped with adequate skills and knowledge not only in terms of counselling the patients on how to correctly take doses of the medicines, but also on whether the medicines should be taken with or without food, with what other medicines should they not be co-administered, and at what time intervals should they be taken. Additionally, the staff should be able to educate their patients on any other restrictions/contraindications that are specific for the medicines (13).

The personnel should also be able to forewarn their patients about the type of adverse reactions to be expected and be in a position to explain to them what measures to take should these reactions be experienced as a result of taking the medicines. The finding that only 40% of the personnel were aware that SP was going to be replaced by ALU within the next 3-4 months even though the medicines were already being stocked and sold in most of

Table 1. Distribution of interviewed dispensers in private pharmacies in Dar es Salaam N=401 and 150 for the CQ to SP and SP to ALU study respectively.

<table>
<thead>
<tr>
<th>Profession</th>
<th>No of Personnel (%)</th>
<th>No of Personnel (%)</th>
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<tbody>
<tr>
<td></td>
<td>First Phase</td>
<td>Second phase</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>83 (21%)</td>
<td>50 (33%)</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>158 (39%)</td>
<td>69 (46%)</td>
</tr>
<tr>
<td>assistants</td>
<td>86 (21%)</td>
<td>27 (18%)</td>
</tr>
<tr>
<td>Nurses</td>
<td>22 (5%)</td>
<td>4 (3%)</td>
</tr>
<tr>
<td>assistant</td>
<td>25 (6)</td>
<td>-</td>
</tr>
<tr>
<td>Clinical officers</td>
<td>27 (7)</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>401</td>
<td>150</td>
</tr>
</tbody>
</table>

Table 2. Knowledge of dispensers on SP, AQ and ALU, N=401 N=150 for ALU.

<table>
<thead>
<tr>
<th>Profession</th>
<th>Good knowledge of SP paediatric dosing calculations (%)</th>
<th>No of Dispenser who the patients to repeat taking SP after 7 days</th>
<th>Good knowledge of AQ paediatric dosing calculations (%)</th>
<th>Good knowledge on ALU adult doses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Phase</td>
<td>Second phase</td>
<td></td>
<td>Second phase</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>23 (23/83)</td>
<td>30 (30/83)</td>
<td>6 (6/50)</td>
<td></td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>3 (0/158)</td>
<td>9 (9/158)</td>
<td>4 (2/69)</td>
<td></td>
</tr>
<tr>
<td>assistants</td>
<td>4 (4/86)</td>
<td>4 (4/86)</td>
<td>0 (0/27)</td>
<td></td>
</tr>
<tr>
<td>Nurses</td>
<td>10 (10/22)</td>
<td>4 (10/22)</td>
<td>0 (0/27)</td>
<td></td>
</tr>
<tr>
<td>assistant</td>
<td>0 (0/25)</td>
<td>0 (0/25)</td>
<td>0 (0/25)</td>
<td></td>
</tr>
<tr>
<td>Clinical officers</td>
<td>4 (27)</td>
<td>4 (27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>44 (44/119)</td>
<td>51 (51/105)</td>
<td>10 (10/150)</td>
<td></td>
</tr>
</tbody>
</table>
these private pharmacies is an indicator of lack of awareness and sensitization on the new malaria treatment guidelines. The majority of the personnel were aware of the change from CQ to SP because by the time this study was being conducted the policy change had already been in operation for more than 12 months. Piling up of CQ stocks in 11% of the visited premises (49 medical shops) could have been a result of the delay by the Ministry of Health and Social Welfare (MoHSW), through the TFDA in instructing the personnel not to dispense the medicine any longer. This delay might have resulted in the message being received on a short notice after the policy change had come into effect. The businesses and the personnel had been, as a result, caught unaware.

Further, it was reported by the personnel that the Ministry had used merely letters in instructing them not to sell CQ anymore. Had other means been pursued to augment the letters the response might have been better, and the piling up would have been minimal. Further, the piling up can also be explained by the fact that the TFDA did not give instructions to the business owners on how to dispose of CQ stocks that were in the stores when the directive to stop dispensing it had been given. Moreover, the participants reported that the Ministry had not clearly spelled out whether the proprietors would be compensated for the loss they could suffer through getting rid of the remaining stocks.

By inference, one could deduce that communication between the policy makers (1) and the private pharmaceutical businesses had either been poor or lacking.

Some of the dispensers reported that they stocked CQ because of pressure from their customers, who still insisted on being provided with the medication. This is indicative of the fact that even the community had not been sensitized on the new malaria treatment policy changes, and also that they had an unfavourable perception on the efficacy of SP as an antimalarial. A similar community perception on SP in one of the districts in the country has been reported by Tarimo and colleagues (14).

Irrational prescribing has recently become a growing problem of global concern (15,16). Updated dispensing personnel in private medical shops have a great role to play in curbing the number of irrationally written prescriptions and related problems since they provide health care services to a large majority of the community. If strategies aimed at updating the dispensing personnel in these private pharmacies on the changes of treatment guidelines were put in place from the very beginning, private drug outlets would complement efforts by the public health facilities in reducing morbidity and mortality in the Tanzania (17).

This study revealed that many of the participants advised their patients to take a repeat dose of SP after one week which is contrary to the treatment guidelines. The treatment guidelines advocate a single dose of the medicine only (1). The extra dose is a waste, unnecessarily increases financial burden on the patients and may exacerbate adverse reactions.

The fact that most of the dispensers in the private pharmacies, could not state the dosing schedules of ALU without referring to the leaflets, notwithstanding the fact that they stocked and dispensed the medicines, is an additional evidence of their lack of adequate knowledge and skills on how to dispense and give counselling on the use of the medicines, and expresses the dire necessity for exposure of the personnel to CME.

A few months before this baseline survey was conducted, the MoHSW had conducted a training workshop for pharmacists working in few selected public health facilities mainly located in cities and municipalities. Elsewhere it has been shown that conducting educative seminars and training of health workers improved their performance in care and treatment of patients (18). Formulation of good treatment guidelines and policies may not necessarily achieve the desired outcome. For this to happen they have to be correctly interpreted and then implemented as intended. A recent report has shown positive results in achieving policy change from CQ to SP in a district in which the targeted community had been sensitized prior to the implementation of the policy (7).

Community pharmacies whose dispensing personnel were the subjects of this study are health care outlets which are readily available and accessible to the large majority of the general public. It is these pharmacies where people obtain their medicines, information about medications and counselling on medical care.

Conclusion

For a successful implementation of new treatment guidelines there is need for involving pharmaceutical staff working in private pharmacies at all stages from guideline preparation, sensitization and training on all the necessary drug updates. This is not only true for the antimalarials but also for other categories of therapeutic agents as well e.g. resistance to antibiotics. Continuing medical education exposure would not only curb parasite resistance to the medicines but also also alleviate the patients of unnecessary financial burdens due to inappropriate uses of medicines caused by wrong information delivered to patients by the out-of-date dispensers.

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We are indebted to all the medical shop owners for admitting us into their premises and thank the participants for agreeing to take part in the study.

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References


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